PAGES 155-226

BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY

AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

NOVEMBER • 1952

Volume 23 Number 3

THE cut on the cover is a reproduction of the Bookplate of The Institute of Paper Chemistry. The drawing, entitled, "the Papermaker," first appeared in 1698 in the Book of Trade by Christoff Weigel. This particular reproduction has been copied from an illustration appearing on page 43 of Dard Hunter's book "Papermaking Through Eighteen Centuries," published in New York in 1930 by William Edwin Rudge. THE INSTITUTE is greatly indebted to Mr. Hunter for permission to use the illustration.

AUTHOR INDEX TO BOOKS

Alberty, R. A. 155
American Chemical Society. *Division of Rubber Chemistry* 156
American Society for Testing Materials 155
Arnold, R. T., ed. 155
Bender, P. 155
Champion, F. A. 155
Daniels, F. 155
Flett, L. H. 155
Gabrielson, C. O. 155
Gardner, W. H. 155
Gaudenzi, N. 155
Herdeg, W., ed. 157
Hunter, D. 156
Jahn, E. C., ed. 157
Jenkins, F. A. 156
Kungliga Tekniska Högskolan. *Organisk-Kemiska Institutionen* 157
Lange, P. W. 155
Mathews, J. H. 155
Mauersberger, H. R. 156
Müller, O. 156
Murphy, G. W. 155
Noller, C. R. 155
Norton, F. H. 156
Renker, A. 157
Rogers, T. S. 156
Rossini, F. D. 156
Sillén, L. G. 155
Treybal, R. E. 156
Varley, E. R. 157
Venkataraman, K. 155
Weston, H. E., comp. 156
White, H. E. 156
Williams, J. W. 155
Wise, L. E., ed. 157

AUTHOR INDEX TO ABSTRACTS

The letter P preceding a page number indicates a patent abstract.

Abbott, T. S. 179
Akher, M. A. 172
Alderson, A. J. 198
Allday, William, and Co., Ltd. 180
Allgemeine Papier-Rundschau 194
Amberg, H. R. 209
American Can Company .....P 223
American Cyanamid Company .....P 220
Anderson, R. F. .....P 217
Anderson, S. F. .....P 217
Andrews, E. 174
Angus, J. 174
Annett, S. R. P. 205
Anzenhofer, R. 204
Arlov, A. P. 193
Armstrong Cork Company .....P 212
Arnamo, A. 196
Arnold, L. K. .....P 223
Atchison, J. E. 159
Badollet, M. S. .....P 213
Baisch, S. J. .....P 216
Bangert, W. G. 172
Barnes, J. G. .....P 222
Basberg, A. 199
Basu, S. N. 176
Battersby, J. E. .....P 217
Beck, C. D. 181
Behmoarach, A. 183
Bekebrede, W. R. 187
Bekk, J. 197
Bell, D. J. 162
Bell, K. E. 206
Bemis Bro. Bag Company .....P 222
Bhargava, M. P. 159
Bickford, W. G. 209
Bienkiewicz, B. 208
Björkman, A. 182
Blair, N. M. 174, 175
Blanford, H. R. 171
Boggs, L. A. 166
Borchardt, L. F. 188
Borkoski, L. P. .....P 219
Borough Polytechnic 191
Bradbury, R. C. 168
Brahmst, G. W. 170
Brecht, W. 196
Brown, M. H. .....P 223
Buffalo Electro-Chemical Company, Inc. .....P 219
Burnham, R. W. 166
Buttery, K. T. .....P 215
Byrne, J. 164
Callow, H. J. 176
Canadian Pulp and Paper Association. *Technical Section. Electrical Engineering Committee* 180
Canadian Pulp and Paper Association. *Technical Section. Engineering Data Sheet Committee* 179
Canadian Pulp and Paper Association. *Woodlands Section* 185
Carr, W. 166
Carroll, J. W. .....P 223
Carter, J. H., Jr. .....P 220, P 221
Casey, R. S. 187
Celanese Corporation of America ...P 223
Celotex Limited 203
Central Waxed Paper Company 179
Chaplin, M. P. .....P 218
Chaplin Corporation .....P 219
Chaturvedi, M. D. 187
Chemical Engineering 206
Chicago Carton Company 185
Chiego, B. .....P 214
Chittenden, A. E. 173, 203
Chrisler, W. L. .....P 215
Cincinnati Industries, Inc. .....P 220
City and Guilds of London Institute 191
Clark, C. L. .....P 214
Clark, T. F. 167
Cohen, S. I. 202
Comey, R. H., Company, Inc. .....P 214
Cone, C. N. .....P 212
Container Corporation of America .. ..P 213, P 219
Container Equipment Corporation ...P 217
Converse, C. W. 201
Cook, F. H. 188
Coomber, H. E. 173, 203
Craig, F. A. 194
Crown Zellerbach Corporation .....P 224
Das, D. B. 176, 177
Day, F. T. 186, 189, 194, 203
Detwiler, J. S. 175
Dickson, R. A. 183
Dilling, C. L. 195
Dixon, W. B. 183
Dobier, M. 169
Dominion Engineering Works Limited .....P 218
Doyle, C. C. 173
Drake, L. 190
E. S. 195
Eckman, G. E. .....P 223
Effenbein, J. 190
Elderfield, V. G. 175
Electrolux Corporation .....P 219
Elhart, E. W. 190
Elliott, N. J. 168
Enkvist, T. 178
Evans, J. C. W. 192
Evans, R. M. 166
F. K. 189
Fallert, C. D. .....P 222
Fearnside, K. 200

Feigley, D. A., Jr. ..... P 212
Felt, C. E. 188
Fibre Containers 192
Filberg, R. J. 171
Fischer & Porter Company 175
Fisher, H. L. 187
Flinn, E. S. 206
Food and Agriculture Organization of the United Nations 190
The Foxboro Company 175
Fra. 201
Frankenstein, W. P. ..... P 215, P 222
Freeport Sulfur Co. 206
Freudenberg, K. 178
Fritts, H. W. 187
Fühler, W. 199
G. Z. N. 208
Gachet, H. 173
Gardner, F. ..... P 214
The Gardner Board and Carton Co. .. P 215
Garrett, R. 171
Gaylord Container Corporation ..... P 222
Ghose, S. N. 176
Glasser, L. G. 167
Goodwin, R. G. ..... P 221
Gould, J. K. 175
Green, J. W. 170
Greenwood, G. B. 167
Grove, C. S., Jr. 187
Guha, S. R. D. 205
Gut, H. 158, 168, 170
Hall, E. H. ..... P 217
Hanlon, R. T. 169
Hardacker, K. W. 197
Hartman, C. H. ..... P 218
Hearle, J. W. S. 163
Hearon, W. M. ..... P 224
Heaton, E. K. 188
Hedström, B. O. 183
Heukelekian, H. 207
Heywood, V. E. ..... P 216
Hill, F. 174
Hillis, W. E. 206
Holdheide, W. 210
Hope, H. B. ..... P 214
Houtman, H. R. ..... P 216
Huber, B. 210
Hull, W. Q. 172
Hunter, R. S. 196
Hutchinson, W. M. ..... P 213
Ice, C. H. 166
Industrial and Engineering Chemistry 186
Industrial Nucleonics Corporation ... 200
Ingmanson, W. L. 199
International Cigar Machinery Company ..... P 220, P 221
Iowa State Research Foundation .... P 223
Iyengar, N. K. S. 200
Jaeger, O. 185
Janett, L. G. 181
Janis, C. G. 179
Jansen, O. 193
Jarman, G. W. 206
Jenke, R. 165
Jessen, H. C. 181
Johns-Manville Corporation ..... P 213
Jones, J. K. N. 163
Kalm, M. 202
Katz, S. H. ..... P 219
Kehoe, R. D. ..... P 221
Kenning, W. A. 200
Keyes Fibre Company ..... P 219
Klasing, A. P. ..... P 222
Kline, G. M. 187
Knoll, W. V. ..... P 218
Koehler, C. J. ..... P 215
Koehler, L. H. 165
Köhler, R. 158
Kothari, P. S. 160
Kotte, H. 183, 207
Krancher, C. G. 161
Krishnaswamy, V. S. 160
Lal, A. 208
Lathrop, E. C. 167
Laverty, C. A. 181
Lawler, F. K. 188
Leach, S. L. ..... P 213
Leaf, R. L., Jr. 170
Lee, H. C. ..... P 216
Leidl, E. 193
Lewis, H. F. 173
Libby, A.D. T. ..... P 214
Link Aviation, Inc. 188
London School of Printing and Graphic Arts 191
Luce, W. A. 187
McAlear, J. M. 175
McCoy, H. B. 159
Macdonald, J. 172
McEwen, R. L. ..... P 219
Mack, C. H. 209
Mackenzie, A. I. 158
McNally, J. A. 211
Malkin, B. A. ..... P 218
Mannbro, N. 205
Mardon, J. 208, 209
Marsh, F. L. ..... P 215
Martin, A. 210
Martin, J. W. 189
Martindale, J. G. 174
Massey-Harris Company 180
Masson Scott & Company Limited .. P 217
Matheis, F. 180
Megator Pumps and Compressors Ltd. 184
Meissner, H. P. 164
Mellon, M. G. 165
Merry, R. C. ..... P 217
Miller, O. E. 195
Minnesota Mining & Manufacturing Company ..... P 220
Mitchell, R. L. ..... P 218
Mitra, M. K. 176, 177
Moden, F. P. 175
Modern Packaging 189
Moilanen, M. 178
Morton, D. 173, 203
Mrachek, L. L. 183
Murto, J. O. 210
National Gypsum Company ..... P 215
National Starch Products Inc. ..... P 213
Nekervis, R. J. 187
Nestor, L. R. ..... P 220
Newhall, S. M. 166
Nordström, T. 211
Northeastern Wood Utilization Council 206
Nossen, Ø. 191
O. T. 194
Ogden, A. G. 191
Olsson, I. 196
Osborne, K. W. 195
Oswin, C. R. 198
Package Machinery Company ..... P 216
Packaging Institute 198
Palmer, C. E. ..... P 216
Palmgren, H. 183
Pandia, Inc. ..... P 221
Paper Patents Company ..... P 221
Parker, G. H. ..... P 213
Parker, L. T. 167
Patterson, D. G. ..... P 220
Patterson, G. D., Jr. 165
Payne, C. R. 187
The Pennsylvania Salt Manufacturing Company ..... P 223
Perry, H. J. 190
Peters, H. 187

Peterson, F. T. 184
Peterson, W. R. .....P 218
Phillips Petroleum Company .....P 213
Picraux, T. V. 179
Pihl, L. 196
Piser, L. 201
Plump, R. E. .....P 223
Potts, R. C. .....P 222
Prentice, H. K. 187
Proulx, R. 186
Pulp & Paper 192, 201
Quintana L., R. 211
Ragossnig, L. 197
Randall, W. H. .....P 219
Rayonier Incorporated .....P 218
Reynolds Metals Company .....P 221
Ringler, W. A. .....P 215
Robinson, E. S. & A., Ltd. 206
Robinson, W. F. E. 208, 209
Rogers, J. S. 206
Ross, C. R. .....P 215
Ross Bros. (Ben Rhydding) Limited .P 215
The Rotareaed Corporation .....P 214
Rowe, W. W. .....P 220
Roy, M. M. 177
Rudolfs, W. 207, 209
Rydholm, S. 162
Ryti, N. 170
St. Regis Paper Company .....P 218
Sarkar, P. B. 177
Sartoretto, P. A. .....P 220, P 221
Schaphorst, W. F. 204
Schie, A. J. .....P 221
Schlosser, P. H. .....P 218
Schreiber, G. R. 190
Schuerch, C. 178
Scott, R. C. 192
Scrivens, D. B. 176
Scruton, H. 208
Secord, R. A. 160
Sen, M. K. 177
Seymour, R. B. 187
Shoudy, P. A. .....P 219
Singer, F. 187
Smith, F. 172
Smith, S. F. 208
Smolens, H. G. 160
Snyder, W. T. .....P 219
Société MECEM 183
Soderlind, C. J. .....P 216
Sooy, B. E. 203
Southern Pulp and Paper Manufacturer 161, 191
Spooner Dryer and Engineering Company, Ltd. 181
Spriestersbach, D. 172
Spurlin, H. M. 164
Stenerson, H. 198
Stevens, C. R., Inc. 180
Stevens, R. H. 201
Stevenson, J. F. 168
Stevenson, L. T. 191
Stewart-Warner Corporation 162
Stoakes, H. R. 189
Stoess, H. A., Jr. 186
Storey, A. B. .....P 223
Stråtveit, N. N. .....P 221
Streib, W. C. .....P 213
Sunila Osakeyhtiö .....P 212
Surino, A. .....P 221
Sutherland Paper Company .....P 215, P 216, P 217
Svenska Cellulosa Aktiebolaget .....P 216
Sweeney, O. R. .....P 223
Sweitzer, C. W. 162
Tabb, C. B. 205
Tarkkonen, O. .....P 212
Technical Association of the Pulp and Paper Industry. *Corrugated Containers Committee* 158
Teeple, H. O. 187
Thilmany Pulp and Paper Company .P 216
Thompson, L. P. 193
Thomson, A. G. 178, 204
Timell, T. E. 163, 164
Tipka, V. L. 187
Totten, A. I., Jr. .....P 221
Troy, D. J. 167
Turgeon, J. C. 172
U. S. Secretary of War .....P 220
United States Envelope Company ..P 216
United States Plywood Corporation ..P 212
Vacuumatic Ltd. 180
Vailland, G. 192
Valente, J. E. .....P 221
Valtasaari, M. 172
Van den Akker, J. A. 197
Vicario, C. .....P 214
Vodonik, J. L. 187
Vogel, P. 194
Voss, K. 160
W. G. 170
Waggoner, F. H. .....P 215
Walter, L. 184
Wareham, J. F. 176, 177
Warner-Jones, K., and Co., Ltd. 182
Wartenberg, F. 204
Weiss, E. B. 190
Wells, S. D. 159
Wender, S. H. 166
Wesp, A. 196
Whalley, G. E. .....P 222
White, T. A. .....P 213
Wilkinson, D. M. 209
Willbrandt, F. M. .....P 217
Williams, A. E. 198
Williams, P. M. .....P 222
Wink, W. A. 197
Wise, L. E. 163
Woelfer, R. O. .....P 217
Wolf, R. B., Jr. 176
Woodroof, J. G. 188
Yntema, L. F. 187
Zatti, A. 182
Zeyen, A. 207

BOOK REVIEWS

Casey, J. P. 225
Cottrall, L. G. 226

ERRATUM

In the October, 1952 issue, page 109, third abstract under Packaging, read: "MODERN PACKAGING. New concepts of military packaging" for the incorrect repetition of the first line of the preceding abstract.

BULLETIN

of

THE INSTITUTE of PAPER CHEMISTRY

AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

NOVEMBER • 1952

Volume 23 Number 3

LIBRARY NOTES

The Bulletin of The Institute of Paper Chemistry is published monthly at Appleton, Wisconsin, by the Board of Trustees of The Institute of Paper Chemistry. Entered as Second Class matter November 13, 1930, at the postoffice at Appleton, Wis., under the act of August 24, 1912. Printed in U.S.A.

THE INSTITUTE OF PAPER CHEMISTRY

OFFICERS

ERNST MAHLER	Chairman of the Board
D. C. EVEREST	Vice-Chairman of the Board
JOHN L. RIEGEL	Vice-Chairman of the Board
WESTBROOK STEELE	President
JOHN G. STRANGE	Vice-President—Treasurer
C. B. SITTERSON, JR.	Secretary
DORIS PICKERT	Assistant Secretary

BOARD OF TRUSTEES

NATHAN M. PUSEY, President of Lawrence College, ex officio
WESTBROOK STEELE, President of The Institute of Paper Chemistry, ex officio

For the term expiring in 1953

DAN K. BROWN, Neenah Paper Company, Neenah, Wis.
GEORGE E. DYKE, Robert Gair Company, New York, N.Y.
STUART E. KAY, International Paper Company, New York, N.Y.
A. B. LAYTON, Crown Zellerbach Corporation, San Francisco, Calif.
KARL E. STANSBURY, Thilmany Pulp and Paper Company, Kaukauna, Wis.

For the term expiring in 1954

SYDNEY FERGUSON, The Mead Corporation, Dayton, Ohio.
DONALD S. LESLIE, Hammermill Paper Company, Erie, Pa.
ERNST MAHLER, Kimberly-Clark Corporation, Neenah, Wis.
W. IRVING OSBORNE, JR., Cornell Paperboard Products Company, Chicago, Ill.

For the term expiring in 1955

D. C. EVEREST, Marathon Corporation, Rothschild, Wis.
DAVID L. LUKE, JR., West Virginia Pulp and Paper Company, New York, N.Y.
GEORGE OLMSTED, JR., S. D. Warren Company, Boston, Mass.
HERBERT T. RANDALL, The Champion Paper and Fibre Company, Hamilton, Ohio.
JOHN L. RIEGEL, Riegel Paper Corporation, New York, N.Y.

STANDING COMMITTEES OF THE TRUSTEES

EXECUTIVE COMMITTEE: Ernst Mahler, Chairman; D. K. Brown, George E. Dyke, David L. Luke, Jr., and Karl E. Stansbury.
INVESTMENT COMMITTEE: Ernst Mahler, Chairman; D. K. Brown, John G. Strange, and Ralph J. Watts.
COMMITTEE ON ACADEMIC POLICY: Nathan M. Pusey, Chairman; Rex Hovey, Harry F. Lewis, Ernst Mahler, John L. Riegel, Westbrook Steele, and John G. Strange.

Books and Pamphlets Added to the Library During October

ARCHITECTURAL ACOUSTICS

AMERICAN SOCIETY FOR TESTING MATERIALS. Symposium on acoustical materials, presented at the fifty-fourth annual meeting, American Society for Testing Materials, Atlantic City, N.J., June 22, 1951. Special technical publication no. 123. Philadelphia, The Society [c1952] 35 p.

CHEMICAL REACTIONS

FLETT, LAWRENCE H., and GARDNER, WILLIAM HOWLETT. Maleic anhydride derivatives; reactions of the double bond. New York, Wiley [c1952] 269 p.

CHEMISTRY—BIBLIOGRAPHY

GAUDENZI, NERIO. Guida bibliografica internazionale per il chimico; libri e riviste. Firenze, Sansoni Edizioni Scientifiche [1952] v. 1. 513 p.

CHEMISTRY, ORGANIC

NOLLER, CARL R. Chemistry of organic compounds. Philadelphia, W. B. Saunders Co. [c1951, reprinted August, 1952] 885 p.

CHEMISTRY, ORGANIC—SYNTHESIS

ORGANIC SYNTHESES, an annual publication of satisfactory methods for the preparation of organic chemicals. Richard T. Arnold, editor-in-chief. New York, Wiley, 1952. v. 32. 119 p.

CHEMISTRY, PHYSICAL AND THEORETICAL

DANIELS, FARRINGTON, MATHEWS, JOSEPH HOWARD, WILLIAMS, JOHN WARREN, BENDER, PAUL, MURPHY, GEORGE W., and ALBERTY, ROBERT A. Experimental physical chemistry. 4th ed. New York, McGraw-Hill Book Co., 1949. 568 p.

SILLÉN, LARS GUNNAR, LANGE, PAUL W., and GABRIELSON, CARL O. Problems in physical chemistry. New York, Prentice-Hall, 1952. 370 p.

CORROSION AND ANTI-CORROSIVES

CHAMPION, F. A. Corrosion testing procedures. New York, Wiley, 1952. 369 p.

DYES AND DYEING

VENKATARAMAN, K. The chemistry of synthetic dyes. New York, Academic Press, 1952. v. 2. p. 705-1442; *cf.* B.I.P.C. 22: 389.

EXTRACTION PROCESSES

TREYBAL, ROBERT E. Liquid extraction. 1st ed. New York, McGraw-Hill Book Co., 1951. 422 p.

INSULATION AND INSULATING MATERIALS

ROGERS, TYLER STEWART, *and others.* Design of insulated buildings for various climates. An architectural record book. F. W. Dodge [c1952] 119 p.

LIGNIN

MÜLLER, OLAV. Zur Kenntnis des Buchenlignins und über eine neue Farbreaktion gewisser Holzarten. Inaugural-Dissertation zur Erlangung der Doktorwürde der Mathematisch-Naturwissenschaftlichen Fakultät der Georg August-Universität zu Göttingen. Göttingen, 1937. 46 p.

OPTICS

JENKINS, FRANCIS A., and WHITE, HARVEY E. The fundamentals of optics. 2d ed. New York, McGraw-Hill Book Co., 1950. 647 p.

PAPER MAKING AND TRADE—HISTORY

HUNTER, DARD. Papermaking in pioneer America. Philadelphia, University of Pennsylvania Press, 1952. 178 p. + 11 plates.

POTTERY

NORTON, F. H. Elements of ceramics. Cambridge, Mass., Addison-Wesley Press, 1952. 246 p.

RUBBER—BIBLIOGRAPHY

AMERICAN CHEMICAL SOCIETY. *Division of Rubber Chemistry.* 1944-45 bibliography of rubber literature (including patents). Akron, The Division [1952] 452 p.

TEXTILE INDUSTRY AND FABRICS

MAUERSBERGER, HERBERT R., *and others.* American handbook of synthetic textiles; American synthetics handbook, a practical text and reference book for the textile and related industries. 1st ed. New York, Textile Book Publishers [c1952] 1216 + 96 p.

THERMODYNAMICS

ROSSINI, FREDERICK D. Chemical thermodynamics. New York, Wiley [c1950] 514 p.

TRADE DIRECTORIES

PAPER AND PULP mill catalogue; engineering handbook. Collection of useful information for pulp and paper manufacturers [comp. by Harry E. Weston] 1952-53. 29th annual ed. Chicago, Fritz Publications [c1952] 532 p.

UNIVERSITIES AND COLLEGES

The WORLD of learning, 1952. 4th ed. London, Europa Publications Ltd., 1952. 952 p.

VERMICULITE

VARLEY, E. R. Vermiculite. Colonial geological surveys. Mineral Resources Division. London, H.M. Stationery Office, 1952. 70 p.

WATER-MARKS

HERDEG, WALTER, ed. Art in the watermark. Kunst im Wasserzeichen. L'art du filigrane. Introduction by Armin Renker. Zurich, Amstutz & Herdeg, Graphis Press [c1952] 103 p.

WOOD—CHEMISTRY

KUNGLICA TEKNISKA HÖGSKOLAN. *Organisk-Kemiska Institutionen.* Publikationer. v. 5. 1946-1950. [A series of reprints with different paging by Erdtman and co-workers]

WISE, LOUIS E., and JAHN, EDWIN C., ed. Wood chemistry. 2d ed. New York, Reinhold, 1952. v. 1. 688 + 32 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ADHESIVES

KÖHLER, RUDOLF. A contribution to the theory of adhesives. Allgem. Papier-Rundschau no. 15: 675-9 (Aug. 12, 1952). [In German]

The author attempts an explanation of the adhesive effect by dividing it into a cohesion of the adhesive and an adhesion to the surface to which it is applied. The cohesion is based upon the linking forces of primary valences and intermolecular forces; the adhesion depends upon known adsorption phenomena. The peculiarities of the adsorption of high-molecular substances with chain molecules in solutions are discussed. The adhesive effect of high-molecular substances is traced to the nonadsorbed particles of chain molecules which protrude from the adsorption layer and thereby transfer forces into the adhesive layer when subjected to tensile or shear stresses. 2 tables, 5 figures, and 8 references. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. *Corrugated Containers Committee.* Corrugated container starch and silicate adhesives symposium. Tappi 35, no. 5: 60A, 62A, 78A (May, 1952); Fibre Containers 37, no. 9: 83-4, 86-7 (September, 1952).

A resume of the questions and answers is given which followed the presentation of papers at the symposium during the TAPPI 1952 annual meeting in New York. The individual papers have been abstracted in previous issues of the B.I.P.C. E.S.

ADVERTISING

GUT, H. The technical drawing in the boxboard industry. Allgem. Papier-Rundschau no. 18: 813-15 (Sept. 26, 1952). [In German]

The value and use of technical drawings of entire packages and individual sections for advertising purposes are explained. 2 figures. E.S.

MACKENZIE, A. I. Paper, type, ink and layouts. Paper & Print 25, no. 3: 359-62 (Autumn, 1952).

The author discusses the fundamentals of the four "tools" of the advertiser or layout specialist and emphasizes the need for a basic knowledge of their characteristics to obtain satisfactory results. E.S.

ALCOHOL

ANON. Ethyl alcohol from waste liquor sulphite. Can. Chem. Processing 36, no. 11: 32-4 (October, 1952).

The process for converting the spent sulfite liquor (40,000 gallons per hour) produced by the Canadian International Paper Co. at its Gatineau mill to high-grade ethyl alcohol by its subsidiary, Commercial Alcohols, is described,

including the individual phases of neutralization, fermentation, and distillation. The plant is completely equipped with instruments for automatic centralized control. 1 flowsheet and 2 figures. E.S.

ALKALINE PROCESSES

WELLS, SIDNEY D. Alkaline pulping progress in 1951. Tappi 35, no. 10: 42A, 44A, 46A, 48A, 50A, 52A, 54A, 56A, 58A, 60A, 62A, 64A, 66A (October, 1952); Southern Pulp Paper Manuf. 15, no. 10: 42, 46, 48, 50, 52, 54, 59, 62-4, 66 (Oct. 1, 1952); *cf.* B.I.P.C. 22: 161-2.

Continuing previous reports, the review of developments during 1951 is presented under the headings: expansion in the United States; expansion in other countries; newsprint; wood procurement; silviculture; semichemical pulping, building, and hardboards; consumption of chemicals; agricultural residues and plant fibers; cooking procedures and digester facilities; tall oil, turpentine recovery, foam, and foam control; analytical and fundamental; recovery operation and equipment; effluents to stream and atmosphere; and purification and bleaching. 670 references. E.S.

ALKALINE PROCESSES—RECOVERY

ANON. Recovery at Charleston. Pulp & Paper 26, no. 11: 60, 62 (October, 1942).

The black liquor recovery system at the Charleston, S.C. kraft mill of the West Virginia Pulp & Paper Co. is outlined. It involves four Babcock & Wilson recovery furnaces in use (three older units are left as standbys) which employ the Tomlinson method of combustion; in addition to the recovery of chemicals, the plant produces about 47% of the total steam requirements of the mill. 7 illustrations. E.S.

BAGASSE

ATCHISON, JOSEPH E. Utilization of sugar cane bagasse in the pulp and paper industry. Paper Trade J. 135, no. 16: 24, 28, 30, 32, 34, 38, 40, 42 (Oct. 17, 1952); *cf.* B.I.P.C. 22: 809.

The author discusses the utilization of sugar cane bagasse in the industry by reviewing its historical development, the reasons for its early failures, the extent of its present commercial success, and possible future trends in view of its world-wide availability. 1 table and 2 illustrations. L.C.

McCOY, H. B. Department of Commerce studies bagasse as newsprint source. Paper Trade J. 135, no. 15: 30, 32, 34 (Oct. 10, 1952).

The author reports on the progress of a special Department of Commerce committee for investigating the obstacles to additional newsprint expansion. Pilot-plant experiments with bagasse are the main topic of the investigation, but hardwood and waste-paper utilization are also discussed. Experimental operations with bagasse have given favorable results in reference to adaptation of existing equipment, cost, availability, yield, and storage. The De La Roza process gave the best results, and it was found that alone or in mixture, bagasse pulp is suitable for high-quality newsprint and for even higher grade papers. L.C.

BAMBOO

BHARGAVA, M. P. Pulp production in India; a commentary. Indian Pulp and Paper 7, no. 1: 32-4 (July, 1952).

The author describes briefly the pulping methods most commonly used in India for the mechanical and chemical treatment of sabai grass and bamboo, the two staple raw materials of the country; he discusses the reasons why operations are not as efficient and economical as they could be and gives suggestions for their improvement. E.S.

KOTHARI, P. S. Bamboo paper and the market. Indian Pulp and Paper 7, no. 1: 97, 99, 101, 103, 109 (July, 1952).

Bamboo is the principal papermaking raw material of India; however, the quality of bamboo papers and boards is not of the same high standards as those manufactured from wood pulp. The author discusses the processing of bamboos, the characteristics of the resultant pulp, its behavior in beaters and on the paper machine, and the urgent need for research and a technical association to bring the necessary improvements about. E.S.

KRISHNASWAMY, V. S. Bamboos—their silviculture and management. Indian Pulp and Paper 7, no. 1: 61-2, 64, 66-7, 79 (July, 1952).

General characteristics of bamboos, the development of rhizomes and culms, flowering and fruiting, the regional distribution in India, artificial regeneration, silviculture and management of *Dendrocalamus strictus* (the male bamboo), including gregarious and sporadic flowering, felling cycles, the physical age of culms, and the importance of bamboo to the Indian paper industry are discussed. 1 illustration. E.S.

BLEACHING

SECORD, R. A. Application of peroxygen compounds in the textile industry. Am. Dyestuff Reptr. 41, no. 19: P581-4 (Sept. 15, 1952).

The physical and chemical properties and uses of the peroxygen compounds of most interest in the textile industry (hydrogen and sodium peroxide, sodium perborate tetrahydrate, and sodium borate perhydrate) are reviewed. When the proper combination of time, temperature, pH, and concentration is used, peroxides are economically competitive with other bleaching chemicals; only simple control tests are required. Bleaching methods for various textile materials are outlined briefly. E.S.

SMOLENS, H. G. Hydrogen peroxide bleaching of textile materials; a background of present-day procedures. Am. Dyestuff Reptr. 41, no. 19: P575-7, P580 (Sept. 15, 1952).

The author outlines the development of the hydrogen peroxide-bleaching process for textile fibers, such as wool, cotton, silk, jute, linen, hemp, grasses, straws, ramie, rayon, acetate, and synthetic fibers. E.S.

BOARD DRYING

VOSS, KLAUS. The heat treatment of wood-fiber hardboards. Holz Roh- u. Werkstoff 10, no. 8: 299-305 (August, 1952). [In German]

The author describes experiments with a German hardboard (Wirus board with a phenol-formaldehyde addition to the furnish) and succeeding heat treatments at different temperatures for improving its quality. At 140° C. the best results were obtained with a heat treatment of 10 hours; at 150°, by one lasting four to eight hours; at 160°, by one lasting about three hours; and

at 180°, relatively short periods were satisfactory. However, when the heat treatment at 180° lasted over two hours, the strength properties deteriorated appreciably; in addition, the plates had to be carefully watched all the time to prevent local heat accumulations and the occurrence of instantaneous combustion. Detailed data on the effect of the heat treatment on water absorption, swelling, and bending and tensile strengths are given in graphical form. It may be assumed that the beneficial effect of the heat treatment is caused by a conversion of the hemicellulosic component which results in an intensified agglutination of the fibers. On extended heating periods a thermal degradation of the cellulose takes place which is followed by a decrease in the strength properties of the fibers. When coarse Defibrator pulp (without the addition of a synthetic resin to the furnish) was cooked with 10% caustic soda for three hours in a stationary digester at 100°, washed, acidified with sulfuric acid to a pH of 5.4 or 4.5, and pressed for different periods, boards were obtained whose properties were considerably below those of standard boards. However, a subsequent heat treatment at 150° for five to six hours brought a substantial improvement. The plate pressed for the longest period gave the highest strength values; the greatest percentage increase was shown by the more strongly acidified plate. 1 table, 5 figures, and 14 references. E.S.

BOARD MILLS

ANON. Djupafors Fabriks AB in pictures. Svensk Papperstidn. 55, no. 17: 674-7 (Sept. 15, 1952). [In Swedish]

The Swedish one-cylinder machine board mill and groundwood mill are described in a series of 24 illustrations. E.S.

ANON. Improvements at Fibreboard. Paper Trade J. 135, no. 16: 48 (Oct. 17, 1952); Boxboard Containers 70, no. 719: 68 (November, 1952); Paper Ind. 34, no. 8: 943 (November, 1952); *cf.* B.I.P.C. 23: 8.

A new 34,500-sq. ft. converting plant has been built at the Sumner, Washington mill of Fibreboard Products, Inc. The equipment installed and the modernization of machines in the mill stock refining department are described; improvements at the Port Angeles mill are also listed. L.C.

SOUTHERN PULP AND PAPER MANUFACTURER. National Gypsum Company—pioneer in papermaking in Oklahoma. Southern Pulp Paper Manuf. 15, no. 10: 90-8 (Oct. 1, 1952); *cf.* B.I.P.C. 22: 730.

The new board mill at Pryor, Okla. is described. 28 illustrations of the mill and its equipment. E.S.

BOARD MILLS—DIRECTORIES

ANON. Mill and personnel directory. Southern Pulp Paper Manuf. 15, no. 10: 103-208 (Oct. 1, 1952); *cf.* B.I.P.C. 22: 188.

The 14th annual directory of the pulp and paper mills in 14 southern states, the District of Columbia, and Puerto Rico is presented, listing executive personnel, equipment, and products made in these mills. The data are interspersed with advertisements. E.S.

BOARD MILLS—WASTE LIQUOR

KRANCHER, CARL G. Strawboard lagoons; case history at an Indiana mill. Pulp & Paper 26, no. 11: 74, 76, 78 (October, 1952); *cf.* B.I.P.C. 22: 396.

Essentially the same information is given as in the previous reference. 1 table and 6 illustrations. E.S.

BOARD SPECIALTIES

ANON. Colorful corrugated tray scores as gift fruit "basket." American Boxmaker 41, no. 10: 12 (October, 1952); Southern Pulp Paper Manuf. 15, no. 10A: 28 (Oct. 10, 1952); Packaging Parade 20, no. 239: 82 (December, 1952).

A red and green octagonal corrugated tray has been developed by Gaylord Container Corp. to be used by Mission Pak for a gift assortment of fancy fruits. 3 illustrations. L.C.

STEWART-WARNER CORPORATION, *Chicago.* Loaded! Palletizing development. Packaging Parade 20, no. 237: 68-9 (October, 1952).

Three types of pallets are described which were developed for instrument panels and speedometers by the packaging engineers at the Corporation. Cubage was reduced, and a considerable saving was made in packing time and material. 8 illustrations. L.C.

BOARD TESTING—PHYSICAL

ANON. Liner board strength relationships. Tappi 35, no. 10: 107-10A (October, 1952).

An inquirer asks for information on the relationships between Mullen strength of board and tear, compression, tensile strength, and stiffness. Three responses are given; the general consensus of opinion is that the Mullen test is not a universal test for the evaluation of board properties; however, it is used because the railroads wrote it into their specifications and no better substitute has yet been developed. E.S.

CARBON

SWEITZER, CARL W. Colloidal carbon—invaluable soot. J. Chem. Education 29, no. 10: 493-502 (October, 1952).

In a general discussion of the properties of colloidal carbon and the diversified industrial uses based on these properties, mention is made of its application to roofing asphalt as a stiffening agent to prevent flow, as an ingredient in various types of inks, and as a dyeing or coating agent in the paper industry to provide permanent black color to different grades of paper and board. 8 tables, 7 figures, and 25 references. E.S.

CELLULOSE

BELL, D. J. The "Cross and Bevan" cellulose of *Posidonia australis.* J. Chem. Soc.: 3649-50 (September, 1952).

Cross and Bevan cellulose, prepared from both fresh leaves of *Posidonia australis* (an Australian seaweed) and from fibrous remains of the plant gathered from the beaches, was acetylated to triacetyl derivatives (pentosan-free) ($[\alpha]_D$ in chloroform −22 to −24°). The acetate was methylated to a trimethyl ether (44.7% methoxyl, $[\alpha]_D$ in chloroform −6°). Hydrolysis of the methyl ether gave 94% recovery of 2,3,6-trimethylglucose. It is concluded that *Posidonia* cellulose is not significantly different from celluloses of other plants. This is contrary to previous conclusions of Earl (*cf.* J. Chem. Soc. 125: 1322-3 [1924]) whose preparations, it is suggested, may have retained xylan. K.W., JR.

RYDHOLM, SVEN. Etherification of cellulose. II. Reactivity of cupricellulose. Svensk Papperstidn. 55, no. 17: 661-4 (Sept. 15, 1952). [In English; German and Swedish summaries] *cf.* B.I.P.C. 21: 158.

The nature and reactivity of sodium cupricellulose are discussed on the basis of previous experimental data. It was found that the probable structure of the compound is of the same nature as that of alkali cellulose; however, all 6-hydroxyls and every second 3-hydroxyl are inactivated by complex formation with the cupric ion. All the accessible hydroxyl groups react at the same rate; hence, the 2-hydroxyls which reacted represent two thirds of the total degree of substitution. This is in accordance with previous findings on the etherification of alkali cellulose where, during the main reaction period, all three kinds of hydroxyls react at the same rate. The initial period found in the etherification of alkali cellulose—during which time only 6-hydroxyls are substituted—is not found in the reaction of sodium cupricellulose, because the 6-hydroxyls are blocked. A structure for the cuprammonium-cellulose complex analogous to the above-mentioned structure of sodium cupricellulose is also suggested. 3 tables, 3 figures, and 12 references. E.S.

CELLULOSE—HEMICELLULOSE

JONES, J. K. N., and WISE, LOUIS E. The hemicelluloses present in aspen wood (*Populus tremuloides*). Part II. J. Chem. Soc.: 3389-93 (September, 1952); *cf.* B.I.P.C. 23: 10.

The acid fraction formed by the partial hydrolysis of aspen sawdust with *N* sulfuric acid was examined further. In addition to 4-methyl-D-glucuronic acid, galacturonic acid and 2-α-(4-methyl-D-glucuronosyl)-α-D-xylose were identified definitely, and paper chromatographic separations indicated that at least five other (unidentified) acids of higher molecular weight were also present. The acids were separated first on charcoal columns and then by elution from cellulose columns. Separations, identifications, and proof of the structure of 2-α-(4-methyl-D-glucuronosyl)-α-D-xylose are described in detail. L.E.W.

CELLULOSE—SORPTION

HEARLE, J. W. S. A note on Peirce's two-phase theory of absorption of water by cellulose. J. Textile Inst. 43, no. 7: T354 (July, 1952).

Peirce's two-phase theory of water absorption by cotton, advanced at a time when the division of cellulose into crystalline and amorphous regions was not well understood (*cf.* J. Textile Inst. 20: T133-50 [1929]), is modified to show the agreement with the distribution of water molecules per hydroxyl group in the amorphous regions of cellulose. 1 reference. E.S.

CELLULOSE ETHERS

TIMELL, T. E. Studies on carboxymethylcellulose. I. A method for estimating the distribution of the substituents in partially substituted carboxymethylcelluloses. Svensk Papperstidn. 55, no. 17: 649-60 (Sept. 15, 1952). [In English; German and Swedish summaries]

A method has been developed for the estimation of the distribution of the substituents on the anhydroglucose units of partially substituted carboxymethylcellulose. The procedures applied were partly the same as those used previously in similar investigations on alkylcelluloses (*cf.* Mahoney and Purves, B.I.P.C. 12: 177-8); partly, new methods had to be developed. The product investigated (a commercial carboxymethylcellulose) was degraded with sulfuric acid and the resulting sugar mixture was isolated after selective neutralization with either an anion-exchange resin or with barium hydroxide. A new method was developed for determining the number of primary hydroxyl groups in the 6-position in cellulose ethers, involving oxidation with periodic

acid of the corresponding glucose mixture and estimation with dimedon of the formaldehyde formed by oxidation of the glycol group in the 5,6-position. The application of this procedure to carboxymethylcellulose gave reliable and reproducible values. After suitable pretreatment, it was found possible to introduce both tosyl and trityl groups into the carboxymethylcellulose. Both methods, tosylation-iodination and tritylation, could therefore be used for an additional determination of the number of primary hydroxyl groups present. The former technique gave a considerably lower, the latter a slightly higher value than the periodate-formaldehyde method. The number of mono-, di-, and trisubstituted anhydroglucose units was determined by selective extraction with various solvents of the corresponding methyl esters of the carboxymethylated glucoside mixture. The results indicated, among other facts, the complete absence of anhydroglucose units substituted in both of the two secondary positions. The studies are being continued. 13 tables, 4 figures, and 29 references. E.S.

TIMELL, T. E., and SPURLIN, H. M. Studies on carboxymethylcellulose. II. The distribution of the substituents in partially substituted carboxymethylcellulose. Svensk Papperstidn. 55, no. 18: 700-8 (Sept. 30, 1952). [In English; German and Swedish summaries] *cf.* abstract above.

The distribution of the substituents has been determined for a number of carboxymethylcelluloses by the methods previously described. In all the products investigated, only one of the two adjacent secondary hydroxyl groups was found to be substituted. This is interpreted in terms of the repelling effect exercised on the negative chloroacetate ion by the negatively charged carboxymethyl group when situated in either position 2 or 3. This probably accounts for the results previously noted on periodate oxidation of various cellulose ethers containing ionized substituents. Assuming that only one of the two secondary hydroxyl groups was amenable to etherification, a statistical calculation of the distribution of the substituents to be expected under these circumstances was carried out. A comparison between the experimental data obtained in this and other studies and those calculated throughout showed good agreement. The composition of two somewhat higher substituted samples indicated some interaction also between the hydroxyl groups in adjacent anhydroglucose units. In conclusion, it is pointed out that it is not always possible by a determination as carried out in the present studies to account for the differences in properties sometimes noticed between apparently similar carboxymethylcelluloses; other methods will have to be applied to elucidate these problems. 11 tables, 3 figures, and 23 references. E.S.

CELLULOSE FILMS, TRANSPARENT

MEISSNER, H. P., and BYRNE, J. Bonding of thin films. J. Applied Phys. 23, no. 10: 1170-3 (October, 1952).

Unsupported films of nitrocellulose of 0.25 micron and less in thickness bonded immediately and spontaneously in air to solid surfaces with which they were brought into contact. Bond strength increased with diminishing film thickness. Similar behavior was shown by films of gold, regenerated cellulose, polymethyl methacrylate, and gelatin. This bonding power of nitrocellulose films, which was apparently not attributable to static electricity or to mechanical joint formation, was lost while the film was immersed in water, benzene, or hexane, but was regained upon removal and drying. 2 tables, 2 figures, and 10 references. E.S.

CHEMICAL TESTING—CARBOHYDRATES

KOEHLER, LEONORE HOLLANDER. Differentiation of carbohydrates by anthrone reaction rate and color intensity. Anal. Chem. 24, no. 10: 1576-9 (October, 1952); *cf.* B.I.P.C. 17: 8-9.

The anthrone-sulfuric acid carbohydrate color reaction was adapted to the study of native polysaccharide complexes. The behavior of known carbohydrates was first established as the basis of comparison. Known sugar types showed distinctive reaction rates and intensities; aldohexoses gave readings of 110 to 165 Klett units per 100γ at their characteristic maximum of five to 10 minutes of heating at 98°C.; ketohexoses, 220 to 270 units per 100γ at their maximum after one to two minutes at 98°. Pentoses produced color readings of 40 to 70 units per 100γ at a maximum of one to two minutes at 98°. Polymers reacted like the constituent sugars; derivatives developed the decreased amount of color expected from the content of the inert component. Bacterial polysaccharides often could be differentiated and partially characterized. This procedure can be used to indicate the probable identity or nonidentity of various polysaccharides, or to estimate the percentage of the carbohydrate portion of a mixture or complex using known standards. In some cases, evidence can be deduced about the nature of the carbohydrate components of a complex. 3 tables, 5 figures, and 16 references. E.S.

CHEMICAL TESTING—PULP—PENTOSANS

JENKE, RICHARD. The determination of pentosans or furfural, respectively, in fibrous materials, pulps, spent liquors, hydrolyzates, and condensates. Das Papier 6, no. 19/20: 415-22 (October, 1952). [In German]

In the determination of furfural with bromide-bromate according to the German standard method, it was shown that neutralization of the hydrochloric acid distillate is unnecessary, that the titration can be carried out satisfactorily at 14°C., that the addition of ammonium molybdate as catalyst is unnecessary, and that the solution can be titrated immediately after adding potassium iodide. In the precipitation of furfural with barbituric acid, both the occlusion of the reagent and the solubility of the precipitate affect the results, and new corrections which are to be applied to the weight of the precipitate are presented. A modified pentosan distillation apparatus is described. A recommended method for distillation is given, together with detailed procedures for determining the evolved furfural by the bromide-bromate and barbituric acid methods. 3 tables, 4 figures, and 8 footnotes. B.L.B.

CHEMICAL TESTING—SULFUR DIOXIDE

PATTERSON, GORDON D., JR., and MELLON, M. G. Determination of sulfur dioxide by color-changing gels. Anal. Chem. 24, no. 10: 1586-90 (October, 1952).

Several granular gels are described which change color when exposed to 150-ml. air samples containing 10 p.p.m. of sulfur dioxide and which provide a simple, rapid method for estimating physiologically dangerous concentrations of sulfur dioxide in the atmosphere. The gel is placed in a glass tube and the air sample is drawn through the tube. Three methods of quantitative estimation may be used: the colors which appear on the various gels may be matched with standard color cards; the length of a colored column may be measured; or the sample volume necessary to produce a desired color or length of colored column may be observed. 6 tables and 34 references.

E.S.

CHEMICALS

CARR, W. Auxiliary products in the paper industry. Paper-Maker (London) 124, no. 2: 135-6, 138-40 (August, 1952); World's Paper Trade Rev. 138, no. 15: 1133-6, 1141 (Oct. 9, 1952).

Auxiliary products are defined as materials which are used in papermaking to perform a special function or to confer a special property on the paper, but which are not essential to paper manufacture. Different products are discussed under the headings: antifoaming agents; dispersing agents; wax emulsions; insecticides applied as beater additives, by coating, or by impregnation; wet-strength resins; fireproofing agents; optical bleaching agents; and agents used in the application of colors for fixing, aftertreating, and levelling dyestuffs. E.S.

CHROMATOGRAPHY

BOGGS, L. A. Two-dimensional paper chromatography using one-dimensional apparatus; application to sugars of spent sulfite liquor. Anal. Chem. 24, no. 10: 1673-5 (October, 1952).

The method involves the running of the first irrigation in the usual manner, with two samples of the unknown mixture and the required samples of standard substances. The strips containing the standards and two of the samples of the unknown mixture are cut from the strip of paper containing the substances to be subjected to the second irrigation. The two outer or indicator strips of the first-dimensional chromatogram are sprayed with a reagent and heated to develop color in the regions where the substances being separated are present. That portion of the unsprayed center strip of the first-dimensional chromatogram containing the material being tested—as shown by the indicator strips—is cut out and woven into the starting line of a new chromatogram, together with the required samples of the known substances. The second-dimensional chromatogram is then irrigated in the usual manner with a second irrigating solvent. After drying, this chromatogram is sprayed with a reagent and heated to develop color in the regions containing the substances being separated. This method of running two-dimensional chromatograms has been applied to the qualitative separation of known mixtures of xylose, arabinose, fructose, mannose, glucose, and galactose and to the sugar fraction of a sample of spent sulfite liquor. Data obtained are presented in tabular and graphic forms. These indicate the presence in spent sulfite liquor of xylose, arabinose, mannose, glucose, and galactose, and the absence of fructose. 2 tables, 2 figures, and 11 references. L.A.B.

ICE, CLARK H., and WENDER, SIMON H. Adsorption chromatography of flavonoid compounds. Anal. Chem. 24, no. 10: 1616-17 (October, 1952).

A chromatographic method for the isolation of closely related flavonoids by adsorption onto Magnesol is described. 8 references. E.S.

COLORIMETRY

BURNHAM, R. W., EVANS, R. M., and NEWHALL, S. M. Influence on color perception of adaptation to illumination. J. Optical Soc. Am. 42, no. 9: 597-605 (September, 1952).

Six experienced observers made consistent determinations of various colors which appeared the same with adaptation to tungsten light and to artificial daylight. The procedures and results are discussed in detail. Plots of the data on the I.C.I. chromaticity diagram indicate a systematic shift in color appearance toward the blues when the adaptation was changed from daylight

to tungsten, or toward the yellows when the adaptation was changed from tungsten to daylight. 7 figures and 11 references. E.S.

GLASSER, L. G., and TROY, D. J. A new high sensitivity differential colorimeter. J. Optical Soc. Am. 42, no. 9: 652-60 (September, 1952).

A new high-precision, tristimulus, filter colorimeter suitable for both research and industrial use is described. The instrument can reproducibly measure I.C.I. tristimulus values X, Y, and Z, and ratios of tristimulus values, sample to standard, to four significant figures for most colors. Color differences considerably smaller than those which a trained observer can detect visually can be measured on all colors from whites to blacks of about density 4. The luminous apparent reflectance of carefully polished black glass has been measured as 0.012%. Tables of value functions and alignment charts have been prepared which permit rapid conversion of instrumental measurements into color co-ordinates or co-ordinate differences of equal visual spacing in a modified Adams chromatic-value system. A slide rule has been devised for the rapid calculation of the total color difference, ΔE. 5 tables, 9 figures, and 3 references. E.S.

CONTAINER INDUSTRY—EDUCATION

GREENWOOD, G. B. Student training program. Southern Pulp Paper Manuf. 15, no. 10: 74, 78, 80, 82-3 (Oct. 1, 1952); Am. Paper Converter 26, no. 10: 14-15 (October, 1952).

Following a brief discussion of the need and resulting benefits of a training program in the boxboard industry, the author describes the different attempts for developing employee training methods by the Robert Gair Co., from which the present course was evolved. It covers a two-years' period during which time the student is assigned to various departments and expected to accomplish different types of work in the mill, laboratory, and sales, purchasing, accounting, personnel, and planning departments. Certain periods per week are allocated for discussions between students and supervisory personnel, but no formal examinations are held. Union acceptance is an important prerequisite of the program, as well as the careful selection of the course and the trainee. The different phases of a two-year training program are outlined. E.S.

CONTAINER INDUSTRY—LAWS AND LEGISLATION

PARKER, LEO T. Legality of sales contracts. Fibre Containers 37, no. 9: 118, 120-4 (September, 1952).

Examples are given which illustrate the legality of sale contracts for paperboard and paperboard containers made between a seller's agent and the purchaser. The higher courts generally hold valid contracts made by sales managers and purchasing agents, whereas contracts made by ordinary representatives and salesmen are not valid, unless the complaining party proves that such legal representation was authorized by the employer. The implications of different sales contracts are discussed. E.S.

CORNSTALKS

LATHROP, E. C., and CLARK, T. F. More cob processing plants. Chemurgic Digest 11, no. 9: 4-8 (September, 1952).

The development of the corncob processing industry and uses for ground corncob fractions are described, including furfural, fillers, cattle-feed base, soft-grit blast cleaning agents, and similar applications. 2 tables, 1 map, 1 flowsheet, and 4 illustrations. E.S.

CORROSION

ANON. A new concept for rust prevention. Monsanto Mag. 31, no. 4: 16-18 (October-November, 1952).

The development of "Vapor Phase Inhibitor" (VPI) crystals from dicyclohexylamine by the Shell Development Co. and their incorporation into paper and paperboard for rust-preventing packaging by several licensed firms are mentioned. Military and commercial applications of VPI papers and films are listed. The names of companies which have been licensed to make VPI-coated paper and VPI-treated paperboard are appended. 5 illustrations. E.S.

COST—ACCOUNTING

ANON. Costing for the bag industry. Paper Container 66, no. 4: 91; no. 5: 115; no. 6: 139 (April-June, 1952); 67, no. 1: 5, 7; no. 2: 35; no. 3: 59; no. 4: 83 (July-October, 1952).

The author describes the principles of a costing system and its method of application to any type of bagmaking or -selling operation by discussing the cause and effect of the subject, the basic principles of cost finding, job-cost allocation, cost analysis, budget, the establishment of hourly rates, and the application of the data to the cost of running each machine. The importance of a sound system, particularly under present conditions of fluctuation and inflation, is emphasized. E.S.

ELLIOTT, NORMAN J. Overhead—its meaning and application. Article 2. Boxboard Containers 70, no. 718: 44-6 (October, 1952); *cf.* B.I.P.C. 23: 94.

Overhead is the price (or cost price) for the use of organizational and productive facilities and services in nonproductive work for a given time. Detailed work reports are an essential part of its calculation. The use of standards of overhead cost based on production time for specific equipment or processing facilities and services is the most accurate way to allocate overhead to products and to units of production; applying a percentage ratio on the direct cost of materials and labor is considered an archaic inaccurate method. Dealing with the paperbox industry in particular, the author lists and describes seven overhead costs for the use of a spiral winding machine or a cutting and creasing press, and gives reasons for establishing overhead rates and standards for single pieces of equipment on an annual rather than a monthly basis. 2 illustrations of cost-analyzing forms, and 1 graph. L.C.

DE-INKING

BRADBURY, R. C., and STEVENSON, J. F. De-inking waste paper in the U.S.A. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 2: 356-65; discussion: 366-70 (May, 1952).

The authors describe the waste-paper collection scheme of the Mead Corp., the processing and uses of waste paper, problems associated with the deinking process, stream pollution, and the future outlook for deinked pulp. 3 tables. E.S.

DIE-CUTTING

GUT, H. The lockup of steel-rule dies. Allgem. Papier-Rundschau no. 12: 548-52 (June 26, 1952). [In German] *cf.* B.I.P.C. 22: 822.

The operations involved in the lockup of dies are described in detail. 17 figures. E.S.

EDGE GILDING

ANON. Book gilding. Indian Print & Paper 18, no. 1: 23, 17 (July, 1952).

The different stages involved in the gilding of book edges are explained. A brief reference is made to the techniques for different kinds of paper. 2 illustrations. E.S.

ELECTRIC PRECIPITATORS

ANON. Dust collecting and re-slurrying in black liquor now one step at Union Bag and Paper Corp. Chem. Processing 15, no. 10: 6, 10 (October, 1952); *cf.* B.I.P.C. 22: 823.

The wet-bottom, electrostatic precipitator operating in connection with a spray-type black-liquor recovery furnace at the Savannah mill of Union Bag and Paper Corp. is described. 1 flowsheet and 1 illustration. E.S.

ESPARTO

ANON. Cyrenaica esparto grass. World's Paper Trade Rev. 138, no. 8: 603-4 (Aug. 21, 1952).

As a result of Anglo-Libyan collaboration, the Cyrenaican Esparto Co. Ltd. was launched to develop the new industry in Libya, and to train pickers to harvest the grass and clean it properly for sale. At the end of July the first bulk shipment was sent to Glasgow after successful trials in English and Scotch mills had been made. E.S.

FEED WATER

DOBIER, MURRAY. The causes and effects of condensate contamination. Pulp Paper Mag. Can. 53, no. 10: 175-6 (September, 1952).

The author discusses the removal of the three major contaminants of condensate, i.e., oil, oxygen, and carbon dioxide, and the extent to which some of the recent water-conditioning treatments fulfil this purpose. All systems have advantages and disadvantages for any particular application and must be selected after careful study of all the factors involved. 2 figures. E.S.

HANLON, R. T. The causes and effects of condensate contamination. Pulp Paper Mag. Can. 53, no. 10: 169-74 (September, 1952).

The trend of the Canadian pulp and paper industry toward the utilization of intermediate and high-pressure boilers for the production of steam for process and, in some cases, power has enforced more stringent requirements in connection with the purity of boiler feed water than were formerly necessary with low-pressure operation. This entails the application of modern methods of pretreatment of make-up water and the recovery of all possible condensate for re-use as boiler feed water. Condensate, however, is often seriously contaminated as a result of the use of steam for process and by iron, copper, and other materials which are products of corrosion in the condensate system. The adverse effect of these contaminants in the promotion of boiler deposits and the means of eliminating these contaminants are discussed. The application of modern methods of make-up water preconditioning and the effect of these methods upon decreasing condensate contamination are also discussed. The application of volatile amines to the control of condensate-system corrosion is described and data are presented which disclose the performance of these amines under actual plant operating conditions. 8 figures and 12 references. E.S.

FILES AND FILING

GUT, HERMANN. A card file for boxboard blanks, an aid for the boxmaker. Allgem. Papier-Rundschau no. 17: 774-6 (Sept. 12, 1952). [In German]

The assembly and application of a card file containing information on boxboard blanks, as well as its advantages, are outlined. 4 figures. E.S.

FINISHING ROOM

RYTI, NIILO. Handling of paper in sheets at the Kangas mill. Paper and Timber (Finland) 34, no. 9: 342 (September, 1952). [In Finnish; English summary]

Different steps in the handling of paper in sheets are described. To improve the precision in paper sorting, a second random inspection of the already sorted reams was carried out and the results were treated statistically. Attempts have been made to mark paper defects on the machine or on the cutter and to abandon the inspection of individual sheets; however, this resulted in a less satisfactory quality level of the sorted reams. E.S.

W. G. Economical checking for paper defects. Allgem. Papier-Rundschau no. 12: 564-5 (June 26, 1952). [In German] *cf.* B.I.P.C. 22: 576.

With reference to the article by Immonen, a partially mechanized system in a German finishing room is outlined briefly. Mention is also made of the British paper-inspection machine built by John Shaw & Sons Ltd., Honley-Huddersfield (*cf.* B.I.P.C. 20: 714). 1 illustration. E.S.

FIRE PREVENTION

BRAHMST, G. W. Causes and prevention of mill fires. Fibre Containers 37, no. 9: 71-4, 76 (September, 1952).

The author analyzes the major causes of paper and paperboard machine fires and outlines precautions and practices which will help to prevent such fires. E.S.

FOAM

GREEN, JOHN W., and LEAF, ROBERT L., JR. A study of the components of jack pine groundwood white water with special emphasis on the foam phenomenon. Tappi 35, no. 10: 468-80 (October, 1952).

The excessive foaming encountered in the grinding of green jack pinewood is well known to the paper industry. In contrast, little trouble has been experienced with seasoned pine or spruce. As a result, the use of the green wood has been avoided as much as possible, because the presence of foam on the paper machine causes poor formation of the sheet on the wire. In the present work, synthetic white water extracts were prepared from jack pine sawdust in the laboratory under controlled conditions, and the foam data (or foaming ability of the wood) were studied. A definite decrease in foaming ability occurred with the seasoning of jack pine sawdust in air, whereas storage in nitrogen prevented this decrease. The removal of resinous materials from the wood had a limited effect on the foaming ability. Variations in the preparation of the extracts showed that the high temperature of the water is the primary factor in producing the foam effect. The dispersions are affected by time, temperature, various additives, and the adsorption of colloidal ma-

terial by sawdust or charcoal. With the aid of two types of foam fractionation columns, the foam in the hot water extracts was concentrated, and the agent responsible for the foam, a "soluble lignin," was isolated. Jack pine foam concentrates also contained large amounts of an alkali-soluble "pitch," but only a small amount of this pitch was found in spruce foam. Summative analyses of the hot- and cold-water extracts showed that three main fractions were present: carbohydrate (an arabogalactan), lignin, and pitch. The last two fractions were colloidally dispersed. The carbohydrate did not contribute to the foam phenomenon. Spruce white waters contained almost as much material as jack pine. Continued hot-water extraction of jack pine sawdust removed about 18% of the weight of the wood, mostly as carbohydrate material. A reconstitution of the white-water system was attempted. The lignin, whether isolated from jack pine or spruce foam or from the defoamed liquids, gave aqueous dispersions with similar foam data. There is an optimum concentration at which the maximum foam stability of the lignin is obtained. The effect of pitch on the stability of the foam could not be definitely established. 11 tables, 18 figures, and 9 references. E.S.

FOLDING BOXES

ANON. Folding boxes for triangular cake pieces. Allgem. Papier-Rundschau no. 12: 563 (June 26, 1952); Verpackungs-Rundschau no. 9: 349 (September, 1952). [In German]

A folding box for carrying individual cake pieces, particularly those topped with whipping cream, is described. 5 figures. E.S.

FORESTS AND FORESTRY

BLANFORD, H. R. Forestry in relation to the paper and board industry. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 2: 321-32; discussion: 333-6 (May, 1952); World's Paper Trade Rev. 138, no. 11: 815-18, 823-4 (Sept. 11, 1952).

A brief survey of the world supply of pulpwood from natural conifers and hardwoods is given; the coniferous forests are being utilized to capacity on a sustained yield basis and no exportable increase may be expected from America or Europe (excluding Russia). Local regions with forest wealth will develop these supplies for their own use. The prospects seem good for developing suitable areas with short-rotation pure crops of fast-growing conifers and eucalypts for pulp production; however, the possible necessity for rotation of crops or proper treatment of the soil and correct forest hygiene must be kept in mind to prevent soil deterioration and damages from insects and disease. E.S.

FILBERG, R. J. Getting pulpwood for Elk Falls. Pulp Paper Mag. Can. 53, no. 10: 182-4 (September, 1952).

The Duncan Bay Forest Management Licence area on Vancouver Island and islands in Johnstone Straits is described. The forest management plan of the area is discussed and the merits of slash salvage are presented. 6 illustrations. L.C.

GARRETT, RAY. In less than a life span. Am. Forests 58, no. 10: 23-5 (October, 1952).

The pioneer work of Reuben B. Robertson and the Champion Coated Paper Co. in the interests of conservation of forest resources is related. Robertson's sustained efforts along these lines continue to develop better forest management in Champion areas. 4 illustrations. L.C.

MACDONALD, J. British woodlands and their production. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 2: 337-47; discussion: 348-50 (May, 1952).

The author surveys the woodland and forest problems of Great Britain, with particular reference to the small area (6.5%) of woodland and the huge potential demand for forest products. 6 tables. E.S.

TURGEON, J. C. A mathematical study of population factors affecting new growths in forests. Pulp Paper Mag. Can. 53, no. 10: 190, 226 (September, 1952).

Three examples are given of a mathematical expression for the number and species of trees that will exist in a section of land which has been subjected to reforestation after all the mature trees in the area have been cut down or otherwise destroyed. Although certain simplifying assumptions are made, the results are close enough to actually prevailing conditions to make them applicable to actual situations. E.S.

VALTASAARI, MATTI. The role of the forest industry. Finnish Paper and Timber 3, no. 5: 51-60 (July, 1952). [In English]

The significant position of the forest industries in the national economy of Finland is shown in a review of the forest resources and developments in the sawmill, pulp, paper, and board industries with production data for 1951. A list of export organizations is appended. 17 illustrations. E.S.

GLUE AND GELATINE

HULL, WILLIAM Q., and BANGERT, WALTER G. Animal glue. Ind. Eng. Chem. 44, no. 10: 2275-84 (October, 1952).

Following a brief outline of the history of the animal glue industry, the chemical distinction between glue and gelatin and the grading of glues on the basis of comparative gel and viscosity values are described. Production methods are exemplified by the description of the operations of the glue plant of Consolidated Chemical Industries, Inc. at San Francisco, Calif., which produces 10 million pounds of hide and bone glue yearly. The process results in a large tonnage of nonglue-containing materials. After glue extraction, the bone residue is processed and marketed as a stock-feed additive; the bones are also subjected to destructive distillation and the carbonaceous residue is used as a bone char. The tankage from the hide-glue cooking kettles, as well as horns, hoofs, and other materials not suitable for gluemaking, are processed into fertilizer. All grease removed from bones and hides is sold to soapmakers and fat splitters. 7 tables, 1 flowsheet, 13 figures, and 22 references. E.S.

GLYCERIN

ANON. Glycerine a vital factor in industry's adhesives. Am. Paper Converter 26, no. 10: 16-17 (October, 1952).

More than 5 million pounds of glycerin are used annually in the preparation of adhesives consumed by paper and related industries. The hygroscopic properties of glycerin keep animal glue flexible for special requirements. The major uses of glue-glycerin mixtures are discussed, and four formulas for special adhesives are given. L.C.

GUMS AND RESINS

AKHER, M. ABDEL, SMITH, F., and SPRIESTERSBACH, D. The constitution of mesquite gum. Part IV. Determination of the struc-

ture of the amide of 6-β-(4 D-glucopyruronosyl) α-methyl-D-galactopyranoside. J. Chem. Soc.: 3637-40 (September, 1952); *cf.* B.I.P.C. 22: 252.

The controlled hydrolysis of mesquite gum was shown previously to give a monomethyl aldobiuronic acid (I) and 4-methyl-D-glucuronic acid. The crystalline amide obtained from (I) is shown to be derived from 6-β-(4-methyl-D-glucopyruronosyl)-α-methyl-D-galactopyranoside. E.S.

HARD WOODS

CHITTENDEN, A. E., COOMBER, H. E., and MORTON, D. Brachystegia wood from Tanganyika as a paper-making material. Part II. Botanical identification and pulping trials by the sulphite and sulphate processes. Colonial Plant and Animal Products 2, no. 4: 292-6 (1952); *cf.* B.I.P.C. 22: 331-2.

The two species used in the previous section of the article were identified as *Brachystegia longifolia* (I) and *Julbernardia globiflora,* a genus closely related to (I). Both samples gave poor results with the three conventional cooking processes; they required severe conditions to give moderate yields of rather poor-quality pulps. Any pulp industry based on these raw materials would be faced with high production costs combined with a low-grade product. The best results were obtained with the sulfate process, but it is doubtful that even this method could be applied economically under large-scale commercial conditions. The present studies have also shown that a mixture of the two woods can be pulped satisfactorily by the sulfate process. 4 tables. E.S.

LEWIS, HARRY F. Tropical woods as a source of pulp. Indian Pulp and Paper 7, no. 1: 25-30 (July, 1952).

The author presents a summary of the papers which were given at the meeting on tropical woods sponsored by the Wood Chemistry Technical Committee of the Food and Agriculture Organization of the United Nations during the International Pulp and Paper Symposium held at Appleton, Wisconsin on September 18, 1951. 13 references. E.S.

HEATING (INFRARED)

DOYLE, CHARLES C. Electric heat speeds printing production. Boxboard Containers 70, no. 718: 47, 82 (October, 1952).

Electrically heated units can be employed to accelerate the drying of printing inks while, at the same time, reducing the amount of spray normally used in pressrooms. A radiant reflector unit using General Electric Calrod heaters is manufactured by the J. E. Doyle Co. for the purpose. The attachment is reported to eliminate offsetting and static electricity. An installation on a Miehle press is illustrated and described. 3 illustrations. L.C.

HISTORY

GACHET, HENRI. An unfortunate rival of N. L. Robert, Ferdinand Leistenschneider. Papier-Geschichte 2, no. 3: 30-3 (June, 1952); Papeterie 74, no. 8: 497, 499, 501 (August, 1952). [In French]

The author refers to a report made by Leschevin to members of the Academie des Sciences, Arts, Belles-Lettres of Dijon on May 19, 1813 concerning the examination of a "machine for making an endless paper web,"

which a certain Ferdinand Leistenschneider had submitted to his inspection and critique. Very little is known about the inventor, except that he hailed from the Département of Moselle where he had established himself as a maker of paper molds at Poncey near Saint-Seine-en-Montagne for a number of years. According to contemporary reports, his invention was the fruit of 20 years of experimentation, researches, and privations for himself and his family, because he used part of his working time and regular income for the development of his idea. He was discouraged and ready to give up when he finally succeeded in 1811 in attracting the attention of the authorities of that region to his project. Leschevin was charged with the inspection of this machine. In his report, Leschevin was enthusiastic about the beautiful white sheets which the machine delivered with great exactitude; he quoted at length the many advantages which the application of the invention involved, particularly in freeing the industry from the despotism of the workers. Unfortunately no precise statement concerning the mechanical principles of the new machine was made, except that they were quite different from those of Robert's. The cost of the machine was given as between 1500 and 1800 francs. A sheet which was made on the machine was attached to the report; it is of excellent quality and whiteness (after almost one and a half centuries). It is to be hoped that it will still be possible to discover the details of the invention; at least Leistenschneider's name should be rescued from oblivion.

E.S.

HUMIDITY

HILL, F. Constant temperature and humidity chamber. J. Textile Inst. 43, no. 5: P252-3 (May, 1952); see abstract below.

A similar construction as that described by Martindale and Angus is outlined; it is also controlled by means of a 15-inch "Services" automatic humidity control unit using calcium chloride in the drying tower; the disposal of the saturated calcium chloride was not found to present any difficulty.

E.S.

MARTINDALE, J. G., and ANGUS, J. A constant temperature and humidity room. J. Textile Inst. 43, no. 2: P122-3 (February, 1952).

The details of construction and method of operation of a constant temperature and humidity room built on the fourth floor inside the laboratories of the Scottish Woollen Technical College, Galashiels are described. The room was constructed with double walls of Celotex painted with a permeable water paint, and the temperature and humidity are controlled by a "Services" automatic humidity control unit fitted with wet and dry tower. An experiment to dispense with the drying equipment by painting the ceiling with an impervious oil paint was successful; the room has been in operation for several months and the need for a drying tower has never arisen. E.S.

INSTRUMENTATION

ANDREWS, Ed. Modernization and graphic panels. Paper Mill News 75, no. 42: 52, 56 (Oct. 18, 1952).

The advantages of graphic panels are explained by means of an application to brown-stock washer control. 3 illustrations. E.S.

BLAIR, NEIL M. Graphic panels. Paper Mill News 75, no. 42: 50 (Oct. 18, 1952).

The development of the graphic panel for problems of process instrumentation is outlined briefly. E.S.

BLAIR, NEIL M. Higher production rates with graphic control panels. Paper Mill News 75, no. 42: 71-2 (Oct. 18, 1952).

The suitability of graphic panels for applications in the pulp and paper industry is discussed. 2 figures. E.S.

DETWILER, J. S. The use of graphic instrument panels. Pulp Paper Mag. Can. 53, no. 11: 128-30 (October, 1952); Paper Mill News 75, no. 42: 58, 60, 62 (Oct. 18, 1952).

A graphic panel is defined as a central control panel on which appear facilities for maintaining control and obtaining records, in addition to a process flow diagram showing the major process equipment; all panel instruments are located on the flow diagram relative to their actual point of control in the process. The modern graphic panel is the result of the need for simpler operation at the center of the plant, the control room. The functions and advantages of such panels are discussed. 1 illustration in the second reference and 1 reference in both. E.S.

ELDERFIELD, V. G. Instrumentation at Elk Falls Company. Paper Mill News 75, no. 42: 74, 76 (Oct. 18, 1952); *cf.* B.I.P.C. 23: 114.

The instrumentation in the various departments of the new newsprint mill is described. 2 illustrations. E.S.

FISCHER & PORTER COMPANY, *Hatboro, Pa.* The resotronic regulator. Paper Mill News 75, no. 42: 82, 84 (Oct. 18, 1952).

The application of the resotronic continuous quantitative analyzer (based on the use of the resonance phenomenon) to the measurement of the amount of solids in a slurry or suspension is described; the present design is solely for the purpose of measuring the consistency of paper pulp, primarily in the thin-stock range. 2 diagrams. E.S.

THE FOXBORO COMPANY. New graphic panel simplifies brown stock washing control at Gaylord Container Corp. Paper Mill News 75, no. 42: 66 (Oct. 18, 1952).

A brief description of the new graphic panel is given which the Gaylord Container Corp. is installing at its Bogalusa, La. plant to provide complete control facilities for the new three-stage IMPCO brown-stock washers. 2 illustrations. E.S.

GOULD, J. K. Instruments are cost cutters. Paper Mill News 75, no. 42: 94, 96, 98 (Oct. 18, 1952).

The reasons for the installation of instruments and their advantages are described; a few examples of the actual savings experienced by the Longview Fibre Co. following the installation of instruments are given. E.S.

MCALEAR, JAMES M. Advantages of automatic digester controls for alkaline pulping. Paper Mill News 75, no. 42: 84 (Oct. 18, 1952); *cf.* B.I.P.C. 22: 574.

The advantages of automatic steam admission and relief controls on sulfate digesters are described briefly. E.S.

MODEN, F. P. Some recent instrumentation applications. Paper Mill News 75, no. 42: 88-9 (Oct. 18, 1952).

The author describes the application of a Brown Moist-O-Graph to the measurement and recording of the moisture content of newsprint at a machine speed of 1400 f.p.m. and the use of radiation pyrometry as a means of paper machine temperature control. Both instruments were installed at the Anglo-Canadian Pulp and Paper Mills, Ltd. E.S.

SCRIVENS, DONALD B. Instrumentation in the pulp and paper industry. Instruments 25, no. 10: 1420-4, 1456; discussion: 1456, 1458 (October, 1952).

Different papermaking instrumentation problems are described, including the control of grinders, chemical and semichemical pulping processes, consistency control, the bleaching of kraft, the drying of paper, and control systems applied to the paper machine. 9 figures. E.S.

WOLF, ROBERT B., JR. Two control systems to help produce better paper, faster. Paper Mill News 75, no. 42: 93, 98 (Oct. 18, 1952).

A brief description of the Foxboro flat-box vacuum control system and the Foxboro stock-temperature controller is given. 2 diagrams. E.S.

JUTE

BASU, S. N., and GHOSE, S. N. Fungal decomposition of jute fibre and cellulose. Part IV. The action of some physical and chemical agencies on subsequent fungal decomposition of jute. J. Textile Inst. 43, no. 8: T355-61 (August, 1952); *cf.* B.I.P.C. 23: 19.

The effect of sunlight, heat, fungal growth, acid, and alkali on the subsequent decomposition of jute by fungi has been studied under certain conditions. The general experimental procedures were the same as those described in Part III. Biologically, jute has been found to be a rather unstable fibre which differs from cotton in that all the above agencies, except fungal action, render the fiber more open to attack. Particularly noteworthy are the actions of light and alkali, which appear to favor the decomposition of cellulose in jute indirectly through the modification of the noncellulosic portion. The removal of lignin—although probably a very significant part of such modification—does not always account for the whole effect. 4 tables and 7 references. E.S.

CALLOW, H. J. Acetylation of jute. J. Textile Inst. 43, no. 8: T423-32 (August, 1952).

Jute yarn has been acetylated by a number of methods, and some physical properties of the acetylated material have been examined. Prevention of discoloration on exposure to light is shown to be sensibly independent of the method of acetylation and to depend upon the acquisition of a sufficiently high acetyl content. There is some loss of dry strength on acetylation, but the wet strengths of treated yarns are higher than those of the samples from which they are prepared. The resistance of the fabric to abrasion is generally reduced on acetylation although, in one case, this was found to be greater. Fractionation of the acetylated material has shown that the lignin, *in situ*, acquires acetyl groups more readily than does the cellulose. 4 tables, 3 figures, and 17 references. E.S.

DAS, D. B., MITRA, M. K., and WAREHAM, J. F. Action of hydrogen peroxide on jute. Part I. J. Textile Inst. 43, no. 8: T443-9 (August, 1952).

The effect of hydrogen peroxide on the chemical constituents of jute fiber has been studied in some detail. It has been observed that, when jute is treated with 0.3% of hydrogen peroxide (liquor ratio 1:20) in the presence of alkali (sodium carbonate and silicate) at 75 to 80°C., the α-cellulose remains unattacked as determined by its fluidity and copper number, whereas about 4.2% of the hemicelluloses goes into solution, together with a small amount of lignin when the color of the jute is much improved. Above this concentration, however, the α-cellulose is attacked and jute loses more lignin but no further hemicelluloses. By increasing the liquor ratio to 1:100 and the concentration of hydrogen peroxide to 6%, it has been possible to remove only about 4.6% lignin and 4.5% hemicelluloses (calculated on the dry weight of the untreated jute). It is suggested that part of the lignin or hemicelluloses is differently constituted or located in the fiber than the rest. 5 tables and 13 references. E.S.

DAS, D. B., MITRA, M. K., and WAREHAM, J. F. Action of hydrogen peroxide on jute. Part II. J. Textile Inst. 43, no. 8: T449-53 (August, 1952).

The effect of various relative humidities on the water adsorption of jute fibers treated with different concentrations of hydrogen peroxide at a controlled time, temperature, and liquor ratio, and the effect of such treatment on the dry and wet tensile strengths of jute yarns have been studied. It has been observed that the moisture adsorption is roughly independent of the treatment over a wide range of relative humidities (19.5 to 92.0%). When the concentration of the hydrogen peroxide was within 0.6%, the dry strength of the yarn was found to be increased, whereas its wet strength was much decreased. These observations supported the suggestion that lignin is present between the disorganized chains preventing their crystallization and thus making the polar groups of the cellulose-hemicelluloses chains available for water adsorption. Therefore, the high hygroscopicity of jute over cotton may be due to the noncrystallinity caused by the lignin cellulose-hemicelluloses linkage. The oxidation of jute by hydrogen peroxide results in the breakdown of these linkages and their substitution by new hydrogen bonds which are effective in the dry state and, hence, a slightly lower adsorption was observed when the R.H. was 9.4%. When saturated, because of lower resistance to swelling, the new hydrogen bonds are likely to be less effective, which would result in the observed increase in the adsorption of the treated jute. 2 tables and 7 references. E.S.

ROY, M. M. and SEN, M. K. The swelling of jute fibre in water (transverse swelling). J. Textile Inst. 43, no. 8: T396-401 (August, 1952).

The transverse swelling of jute in water is of the same order as that of cotton, and no relation has been observed between swelling and fineness of the fibers. Lignin acts as a swelling depressant in jute, and drastic delignification greatly increases the swelling property. Jute treated with alkali swells more than raw jute; the higher degree of swelling of the alkali-treated jute is attributed principally to the rupture of alkali-sensitive bonds. The swelling of the fibers, when treated with 17.5% sodium hydroxide solution and stretched, shows a remarkable increase because of the increase in the orientation of the molecular chains. 4 tables, 2 figures, and 18 references. E.S.

SARKAR, P. B. Acetyl groups in jute fibre. J. Textile Inst. 43, no. 6: T290 (June, 1952); *cf.* B.I.P.C. 22: 580-1.

The author refutes some of the statements by Bhattacharjee and Callow regarding the presence and linkage of the acetyl groups in jute, in which the

two authors criticize Sarkar's and co-workers' earlier work (*cf.* B.I.P.C. 18: 595). 5 references. E.S.

LATEX, SYNTHETIC

THOMSON, A. G. Synthetic latices in the paper industry. World's Paper Trade Rev. 138, no. 14: 1034, 1036 (Oct. 2, 1952).

Although nearly 200 synthetic latices are commercially available in the United States, not all of them can be obtained or are made in Great Britain. The author discusses the polyvinyl latices Geon 151, 352, and 652, which are of special interest to papermakers. The methods of coating and properties of the films are described. E.S.

LIGNIN

ENKVIST, TERJE, and MOILANEN, MAURI. Digestion of lignin model substances with sodium hydrosulphide solutions. Svensk Papperstidn. 55, no. 17: 668-73 (Sept. 15, 1952). [In English; German and Swedish summaries]

The chemistry of the sulfate process was studied through a series of digestions with lignin models of the benzyl alcohol or benzyl ether types; the experiments were carried out in a manner similar to those described by the authors in a previous paper (*cf.* B.I.P.C. 19: 776). Twenty-two new lignin model substances were heated with phosphate-buffered sodium hydrosulfide (I) solutions of pH 7-9 for 72 hours at 100°C. The substances which contained a benzyl alkyl ether group with a free phenolic hydroxyl group in the benzene nucleus reacted readily with (I) and formed substances rich in sulfur. The corresponding methoxybenzyl alkyl ethers, on the other hand, did not react to any significant extent; neither did several substances with a γ-pyrone nucleus (xanthone and flavanones) and several phenol glucosides. The following hypothesis concerning the mechanism of sulfate cooking is advanced: The main part of the sprucewood lignin is composed of building stones with, on the average, four or five groups of 10 carbon atoms held together by phenol ether bonds. These building stones are cross-linked by dialkyl ether bonds which form a network with a rather high molecular weight. During the sulfate cook the sodium hydroxide splits principally phenol ether bonds. The phenolic hydroxyl groups thus formed activate the dialkyl ether cross linkages, whereupon they can be easily split by the sodium hydrosulfide of the white liquor. Meanwhile, new carbon atom bridges in the *o*-position to the phenolic hydroxyl groups are formed between the benzene nuclei. The result is the dissolution of the lignin in the form of fragments of various sizes with an average molecular weight of about 1000. 2 tables and 31 references. E.S.

FREUDENBERG, KARL. The origin of lignin in plants. Holz Roh- u. Werkstoff 10, no. 9: 339-41 (September, 1952). [In German]

This is a summary of the author's recent researches in this field carried out in collaboration with a number of co-workers (*cf.* particularly B.I.P.C. *22*: 830). 2 figures. E.S.

SCHUERCH, CONRAD. The solvent properties of liquids and their relation to the solubility, swelling, isolation and fractionation of lignin. J. Am. Chem. Soc. 74, no. 20: 5061-7 (Oct. 20, 1952).

The ability of solvents to dissolve or swell a variety of isolated lignins increases as the hydrogen-bonding capacities of the solvents increase, and as their solubility parameters (after Hildebrand) approach a value of around

11. Lower molecular weight-lignin fractions are soluble in solvents with a wider range of solubility parameters and hydrogen-bonding capacities than are the higher fractions. Earlier fractionations of ethanol and hydrol lignins are applications of this fact. Solubility trends in mixed solvents and within a homologous series of solvents are correlated with the same solvent properties. The yield of ethanol spruce lignin is substantially increased when the reaction is carried out in a better solvent system, such as chloroform-ethanol. A threefold ethanolysis under mild conditions of acidity and temperature in this solvent mixture has given rise to a variety of products with widely different partition coefficients, solubilities, and viscosities. The insolubility of lignin in wood and the heterogeneity and low molecular weight of its degradation products suggest the probability of a network structure or structures for lignin. 9 tables and 33 references. E.S.

LOADING AND UNLOADING—CARS

ABBOTT, T. S. Bulk unloading problems—how to avoid them. Paper Ind. 34, no. 7: 854-6 (October, 1952).

The advantages of a car shaker for unloading hopper cars (particularly for materials with an angle of slide greater than 30°, wet, or frozen materials) are described. 2 tables and 5 figures. E.S.

CENTRAL WAXED PAPER COMPANY. Steel strapped floating loads solve waxed paper shipping problem. Paper Trade J. 135, no. 16: 20 (Oct. 17, 1952); Packaging Parade 20, no. 239: 137 (December, 1952).

By strapping its carload shipments into "controlled floating loads," this waxed-paper manufacturer has virtually eliminated transit damage and has cut loading time by 50%. Horizontal and vertical strapping with 1.25-inch wide, 0.035-inch Unit-Load banding is described step by step. Wooden gates and cardboard strips are also applied. 4 illustrations. L.C.

LUBRICATION AND LUBRICANTS

PICRAUX, T. V. Controlled application of lubricants. Paper Mill News 75, no. 42: 86-7, 143-4 (Oct. 18, 1952).

Perfect lubrication depends on a method that will assure the application of the correct lubricant in the correct quantity at the correct time. The advantages of centralized controlled application systems of the Lincoln Engineering Co. are outlined. 7 figures. E.S.

MACHINERY—BELTING

CANADIAN PULP AND PAPER ASSOCIATION. *Technical Section. Engineering Data Sheet Committee.* Belt length for drives. Pulp Paper Mag. Can. 53, no. 10: 178-9 (September, 1952).

Formulas for calculating the length of open belts (flat belts, V-belts, and chain drives) and crossed belts are presented; these are revisions of Data sheets T-9 and T9a, first issued in November, 1937 and revised in May, 1952. 2 diagrams. E.S.

JANIS, CHARLES G. New dressing for corrugator belts. Fibre Containers 37, no. 9: 64, 66 (September, 1952).

The special problems presented by corrugator belts and the advantages of a new belt dressing developed specifically for preserving them are outlined; no details concerning its composition are given. E.S.

MATHEIS, FRED. Selection and maintenance of rubber conveyor belting. Paper Trade J. 135, no. 15: 22-3, 26, 28, 30 (Oct. 10, 1952).

Conveyer belts are discussed in relation to belt construction, type, width, number of plies, reduction of wear from loading impact and loading-chute design, and maintenance through proper installation and repair. 9 figures. L.C.

MACHINERY—BLOWERS

WILLIAM ALLDAY AND CO., LTD. The "Alcosa" blower and exhauster. World's Paper Trade Rev. 138, no. 13: 996, 998 (Sept. 25, 1952).

A brief description of the Alcosa sliding-vane exhausters and blowers is given, including a table of the various models and sizes. 1 table and 2 figures. E.S.

MACHINERY—CABLES

CANADIAN PULP AND PAPER ASSOCIATION. *Technical Section. Electrical Engineering Committee.* Application of electric cable in the pulp and paper industry. Pulp Paper Mag. Can. 53, no. 10: 162-6 (September, 1952); *cf.* B.I.P.C. 22: 832.

A preliminary report of the Canadian Committee on cable recommendations is presented. 9 tables. E.S.

MACHINERY—CONVERTING MACHINERY

MASSEY-HARRIS COMPANY, *Racine, Wis.* 900 box sizes . . . too many . . . but something was done about it. Packaging Parade 20, no. 237: 64-7 (October, 1952).

The spare-parts department of the Massey-Harris Tank Division required at least 900 sizes of corrugated boxes in small quantities. The company could not maintain adequate inventories of these boxes, and it was therefore decided to manufacture its own, employing a Colt "Rite-Size" box machine and using board of three different test strength requirements to meet government specifications for ordnance shipping. The unit can be adjusted to any box size in 60 seconds and is handfed but otherwise completely mechanical. 10 illustrations. L.C.

MACHINERY—COUNTERS

CHARLES R. STEVENS, INC. *Toledo, Ohio.* Sheet paper counter. Paper Trade J. 135, no. 14: 18 (Oct. 3, 1952).

The Stevens automatic sheet paper counter is described which operates on any type of sheet cutter and counts while the sheets are cut from rolls; it is available in several models. 1 illustration. E.S.

VACUUMATIC LTD., *Harwich, England.* A paper counting machine. Paper Box Bag Maker: 48 (August, 1952); Paper-Maker (London) 124, no. 1: 28 (July, 1952); Paper Market: 4 (July, 1952).

Two models of paper-sheet counters are described briefly for counting up to 1500 sheets per minute. The larger model I will handle sheet sizes 3 by 3 feet; the smaller model III will assist printers in checking reams accurately and rapidly. One male or female operator with very little preliminary instruction can run the machines. 2 illustrations. E.S.

MACHINERY—DRIVE

BECK, C. D. The sectional paper machine drive and operating efficiency. Paper Ind. 34, no. 7: 862-5 (October, 1952).

The advantages of sectional electric and mechanical drives are discussed and compared. The relative first cost will vary with the total horsepower required and the number of driven machine sections. Generally speaking, the electric drive will be most economical for medium and large-size machines with a relatively few regulated sections, whereas the mechanical drive will be less costly for small to medium-size machines with a large number of sections. In conclusion, recent improvements of sectional drives are listed. 7 figures. E.S.

MACHINERY—DRYERS

JESSEN, H. C. Drying of insulating board. Tappi 35, no. 10: 455-67 (October, 1952).

Following a brief history of the early methods of drying insulating board, the author describes the component parts of a modern roller drier as applied to board drying. The drier structure, the feeding and discharge sections, and the air-circulating system are outlined. The relative merits of steam, gas, and oil as heating media are discussed. Evaporation and the migration of moisture are explained, and it is pointed out that drying takes place in three distinct stages. The effect of air velocities and temperatures in each of these stages is described, and simple heat calculations pertaining to gas-fired and steam-heated driers are given. Drier efficiencies are discussed, and a formula is developed for calculating the drier efficiency. The starting up of new installations and the various methods to be considered for increasing existing drier capacity are explained. 1 table, 14 figures, and 5 references. L.C.

SPOONER DRYER AND ENGINEERING COMPANY, LTD. Growing demand for "Spooner" machine hoods. World's Paper Trade Rev. 138, no. 10: 756, 758 (Sept. 4, 1952); *cf.* B.I.P.C. 22: 670.

Reference is made to the new factory at Ilkley and the increasing number of Spooner drying units installed in the paper and board industries. 3 illustrations showing the latest type of hood in the course of erection. E.S.

MACHINERY—ELECTRIC EQUIPMENT

LAVERTY, C. A. Maintenance of rotating electrical equipment. Pulp Paper Mag. Can. 53, no. 10: 167-8 (September, 1952).

The author discusses maintenance, as applied to rotating electrical equipment, under the two headings: normal maintenance (required on equipment which is properly designed, well built, correctly applied, and adequately protected) and abnormal maintenance (which includes all work and repairs necessary as a result of poor design, faulty workmanship, wrong application, incorrect installation, inadequate protection, insufficient maintenance, abuse, and accidents). E.S.

MACHINERY—FELTS

JANETT, L. G. Dryer felts in relation to paper drying. Paper Mill News 75, no. 41: 22-3 (Oct. 11, 1952); Southern Pulp Paper Manuf. 15, no. 11: 46, 48 (November, 1952).

The author discusses the possible ways in which the drier felt functions to remove the water from the paper web and the effect of heat, contact between paper and drier, felt tension, and the material from which the felt is made on the efficiency of the operation. The function of drier felts has not received the study it deserves; a few pertinent projects for investigation are suggested. 3 references. E.S.

ZATTI, AURELIO. Papermaking felts. Ind. carta (Milan) 5, no. 8-9: 86-98; no. 10: 107-12; no. 11: 125-8 (August-November, 1951); Papeterie 74, no. 3: 145, 147, 149, 151, 153; no. 4: 221, 223, 225, 227, 229; no. 5: 307, 309, 311, 313, 315; no. 6: 355, 357, 359 361, 363; no. 7: 417, 419, 421, 423, 425; no. 8: 478, 481, 483, 485 (March-August, 1952). [In Italian and French]

This is an extensive treatise of the subject in which the author discusses the different types of felts; their manufacture, including raw materials (wool, cotton, asbestos, and nylon) and the operations involved in weaving; the correct installation of a new felt on a Fourdrinier machine and the factors which exert an influence on felt life; felt conditioners; felt jackets; pickup felts; drier felts; the care of felts left on the machine during shutdowns; the washing of felts removed from the paper machine; drying; storage; moth-proofing; and necessary co-operation between papermaker and feltmaker. 4 tables, 3 figures, and 9 references. E.S.

MACHINERY—FOLDING MACHINE

K. WARNER-JONES AND CO., LTD. The Warner-Jones variable size zig zag folding unit. World's Paper Trade Rev. 138, no. 9: 658-9 (Aug. 28, 1952); Paper & Print 25, no. 3: 304, 306 (Autumn, 1952).

A brief illustration of the new "W-J" variable size folding unit is given, which is a self-contained machine on wheels and driven by a chain drive from the printing machine to which it is attached; it can be connected and disconnected rapidly. 1 illustration. E.S.

MACHINERY—HEAD BOX

ANON. 1,830 f.m. with new pressure inlet. Pulp & Paper 26, no. 11: 56 (October, 1952).

A brief description of the pressure stock inlet constructed for one of the newsprint machines of the Quebec North Shore Paper Co. at Baie Comeau by Sandwell & Co., Vancouver, B.C. is given. It is patterned somewhat along the lines of the headbox of Powell River's new No. 8 machine, and it is anticipated that speeds of 2000 f.p.m. will become possible with the new design. 1 diagram. E.S.

MACHINERY—MIXING APPARATUS

BJÖRKMAN, ANDERS. Shaking of high-pressure vessels according to the resonance principle. Ind. Eng. Chem. 44, no. 10: 2459-63 (October, 1952).

A shaking device is described which employs resonance oscillations for the thorough mixing of the reactants instead of conventional shaking designs. The application of this principle to heavy vessels was successful; the resonance apparatus has the advantages of light construction, a minimum amount of space, and low cost. It can be designed for any degree of efficiency, and the oscillations cause no disturbance to the surroundings. The difficulty lies in the calculations for a suitable design. Two examples of performance are presented, following a survey of the theoretical basis of the construction. In addition to heavy vessels, other applications are possible, when the oscillating body has a large weight as compared with the material to be shaken. The author has applied the principle to hydrogenation studies of spent sulfite liquor (*cf.* B.I.P.C. 21: 733). 10 figures and 9 references. E.S.

MACHINERY—PAPER MACHINE

DIXON, W. B. Some aspects of newsprint manufacture. Proc. Tech. Sect., Brit. Paper and Board Makers Assoc. 33, no. 2: 465-77; discussion: 478-81 (May, 1952).

The modernization of a British newsprint machine and auxiliary equipment is described. Provision was made for continuous Hydrapulper disintegration with automatic filling of groundwood and sulfite pulps in the desired proportion and for addition of clay, alum, and color to the stock continuously by means of a constant-level tank and float control. The paper machine is fitted with such special features as a pressure slice of original design, adjustable table rolls and flowbox, vacuum transfer with dual compartment in the couch box, permanent draw of 0.5% after the seventh drier roll, and a patented vapor-adsorption system. The Harland drive is the first to use the carbon-pile regulator which is instantaneous in action. The major portion of the paper deals with the mechanism of water extraction (pop theory) by a stacked suction press; the principles are fully explained and illustrated and applied to various conditions. 8 figures. E.S.

KOTTE, HANS. The largest glassine paper machine of the world starts operation in Finland. Allgem. Papier-Rundschau no. 15: 673-5 (Aug. 12, 1952). [In German] *cf.* B.I.P.C. 23: 28.

The new paper machine at the Mänttä mill of G. A. Serlachius Oy is described. 4 illustrations. E.S.

MACHINERY—PASTING MACHINE

BEHMOARACH, A. Gluing. Rev. papiers et cartons 15, no. 17: 619-20 (Sept. 1, 1952). [In French]

Different systems for the efficient gluing of labels are described. 4 figures. E.S.

SOCIÉTÉ MECEM, *Saint-Mandé, France.* A new gluing machine. Rev. papiers et cartons 15, no. 17: 623-4 (Sept. 1, 1952). [In French]

A new construction for the application of glue or paste to paper and board is described; it involves the use of three rollers and a circulating pump. 1 diagram. E.S.

MACHINERY—PIPING

DICKSON, R. A. Pipe cost estimation. Tappi 35, no. 10: 8A, 10A, 12A, 14A, 16A, 18A, 20A, 22A, 24A, 26A, 28A, 30A, 32A, 34A (October, 1952); *cf.* B.I.P.C. 20: 406.

This is a complete reprint of the original article. 3 tables and 40 diagrams. E.S.

MRACHEK, LOUIS L. Estimating data for piping labor costs. Tappi 35, no. 10: 34A, 38A (October, 1952).

A rapid method of estimating the cost of steel, aluminum, and stainless steel piping is outlined, which the author claims to be accurate to within 5% of actual construction cost. 1 figure and 3 tables. E.S.

PALMGREN, HANS, and HEDSTRÖM, BENGT O. A. Flow of pulp suspensions in pipes. Svensk Papperstidn. 55, no. 18: 691-9 (Sept. 30, 1952). [In English; German and Swedish summaries]

The authors attempt a rheological analysis of pipe-flow data for pulp suspensions. Following a review of some of the basic concepts of rheology and the pertinent literature, the authors analyze the pipe-flow curve, in which the average linear velocity, the pipe radius, and the shear stress at the pipe wall are combined. For laminar flow of homogeneous materials in long, horizontal pipes and in the absence of slippage flow at the pipe wall, experimental data referring to the flow of a certain material in pipes of different diameters should yield the same pipe-flow curve, independent of pipe diameter. The available data on the flow of pulp suspensions through pipes, however, seem to indicate that this is not the case and that a systematic "diameter effect" in the pipe-flow curves exists. The reasons for this effect are discussed, with particular reference to the following possible explanations: the presence of large experimental errors; nonlinear pressure gradients; slippage flow; heterogeneities of the suspensions; and the existence of either laminar or turbulent flow. Methods for distinguishing between laminar and turbulent flow are discussed; it is shown that thick suspensions generally flow laminarily. The results of this analysis confirm the opinion that pulp suspensions represent very complex materials from the flow point of view and that a great need for more reliable experimental data exists. In addition, research is required for finding a theoretical basis for the many empirical methods of correlation suggested in the literature. 15 diagrams and 20 references. E.S.

WALTER, LEO. Improve your steam piping. Indian Pulp and Paper 7, no. 1: 45-8, 50-1 (July, 1952).

The author presents useful suggestions for the installation of a steam-distribution piping system, including a plant survey and correct pipe sizes, an efficient design and layout, a standard color scheme for identification, replacement records, correct handling of pipes during their installation, regular checking, subdivision of the system into sections, steam separators, end connections, expansion, vibration, noise, supports, lagging, the correct types of valves and fittings, dirt in pipelines, leaky valves, and preventive maintenance. The layout in a new plant is usually placed in the hands of experts; alterations and extensions to existing equipment should also be performed by specialists. 4 figures. E.S.

MACHINERY—PUMPS

ANON. The manufacture and testing of "Nash" pumps. World's Paper Trade Rev. 138, no. 13: 940, 942, 944 (Sept. 25, 1952).

Under license from Nash Engineering Co., the manufacturing group of Walmsleys and Walker Brothers in England build Nash pumps. The exhaustive tests to which each pump is subjected before delivery are described. 6 figures. E.S.

MEGATOR PUMPS AND COMPRESSORS LTD., *London.* The "Megator" pump; simplicity of design, adaptability and wide range of uses. World's Paper Trade Rev. 138, no. 10: 745-6, 748 (Sept. 4, 1952).

The advantages of the pump and its mode of operation are outlined. In the paper industry it is applied to the handling of silicate of soda, caustic liquor, color, size, white water, and chalk and china clay slurries. For stock pumping, those at present in use are of the smaller variety, although developments in this direction are expected in the near future. 4 illustrations. E.S.

MACHINERY—REFINERS

PETERSON, F. T. Hydrapulper, Hydrafiner and jordan refiner; design and application characteristics. Proc. Tech. Sect., Brit.

Paper and Board Makers Assoc. 33, no. 2: 421-45; discussion: 446-50 (May, 1952).

The preparation of the stock for the paper machine consists of three functional stages: pulping or slushing, refining, and cutting. It is inefficient to attempt all three stages in one instrument, such as the hollander beater. The suitability of the Hydrapulper for slushing, the Hydrafiner for refining, and the jordan for cutting is described; the extreme importance of design and application of these three machines is discussed in relation to their functional characteristics, taking the use of the correct size for the proper application into account. Both continuous and batch operations are considered. 13 figures. E.S.

MACHINERY—ROLLS

JAEGER, OTTO. Rubber rolls in pulp and paper manufacture. Indian Pulp and Paper 7, no. 1: 69-70, 72-3, 75-6, 78-9 (July, 1952).

Types of rubber, methods of hardness testing and the instruments commonly used, and the crowning of rubber rolls are described. 5 tables, 5 figures, and 5 references. E.S.

MACHINERY—SAWS

CANADIAN PULP AND PAPER ASSOCIATION. *Woodlands Section.* Cutting tools field meeting. Pulp Paper Mag. Can. 53, no. 10: 187, 189-90 (September, 1952).

An exhibition of mechanical saws coupled with demonstrations of various crew organizations in using these saws formed the background for later discussions at a meeting held in August on the limits of Fraser Companies Ltd. 3 illustrations. E.S.

MACHINERY—VATS

ANON. Suction cylinder molds. Allgem. Papier-Rundschau no. 18: 810-11 (Sept. 26, 1952). [In German]

Reference is made to the cylinder mold equipped with a suction box developed by O. Dörries A. G., Düren, Germany, which will subject to a vacuum only that section of the mold which is covered with the uptaken fibrous layer. However, the suction box is turnable and can be made to react on any part of the mold. Higher operating speeds and thicker uniform webs across the entire width than with ordinary molds become possible. 2 figures. E.S.

MACHINERY—VORTEX-TYPE DIRT SEPARATOR

ANON. Clean pulp from unbarked hardwoods? Paper Ind. 34, no. 7: 861-2 (October, 1952); *cf.* B.I.P.C. 23: 107.

The operating principle of the Centri-Cleaner is described; separation does not depend on the specific gravity of the dirt particles alone, but also on their specific surface and shape. 2 diagrams. E.S.

MATERIALS HANDLING

CHICAGO CARTON COMPANY. Conveyors pay off in smooth flow of finished work. Boxboard Containers 70, no. 718: 40-1 (October, 1952).

This carton company has engineered a system of gravity and power conveyors which entirely eliminates manual handling of cartons after they are packed in shipping containers. A take-off device moves the containers from

one unit to another, passing them through an automatic imprinter and routing them to the storage rooms and the shipping department. The equipment was installed by Lamson Corp., Syracuse, New York. 6 illustrations. L.C.

DAY, FREDERICK T. Mechanical handling and storage of paper. Part 5. Paper Box Bag Maker: 17-19 (July, 1952); Paper Market: 36, 40, 42 (August, 1952); Paper-Maker (London) 124, no. 2: 128, 130-1 (August, 1952); *cf.* B.I.P.C. 23: 30.

Some of the new mechanical handling equipment and devices shown at the British Mechanical Handling Exposition and Convention at the Olympia are discussed, including the "through"-system stacker (*cf.* B.I.P.C. 22: 921-2), the Soldan-Spicer Autolift, different types of trucks, and battery-operated trucks. 2 illustrations. E.S.

DAY, FREDERICK T. Mechanical handling and storage of paper. Part 6. Paper Box Bag Maker: 62-4 (August, 1952); Paper Market, Export no.: 76, 78, 80 (September, 1952); Paper-Maker (London) 124, no. 3: 214-16 (September, 1952).

The author discusses possible applications of electronics to materials-handling problems, the Hydrum handling and stacking equipment, stillages, drum lifters and dispensers, and pallets for paper supplies. 2 illustrations. E.S.

DAY, FREDERICK T. Mechanical handling and storage of paper. Part 7. Paper Box Bag Maker: 105-8 (September, 1952); Paper-Maker (London) 124, no. 4: 310-12, 314 (October, 1952).

In the final installment of this series of articles, the author discusses the need for co-ordination of efforts, co-operation between equipment manufacturer and user, and equipment best suited to the paper and printing trades, including box and production trucks, an automatic sheet feeder, electric fork lift trucks, and improved gravity-roller conveyors (Rola Veyor and Mota Veyor). 3 illustrations. E.S.

PROULX, ROSAIRE. Safety clamp for lift trucks. Pulp Paper Mag. Can. 53, no. 10: 177 (September, 1952).

A safety clamp for the lifting and loading of pulp bales into cars is described. 6 figures. E.S.

STOESS, H. A., JR. Pneumatic conveyors in pulp and paper mills. Tappi 35, no. 10: 433-8 (October, 1952).

Because of today's trend toward higher labor costs, pneumatic conveyors are employed more extensively throughout the paper industry to cut these costs to a minimum. Economic interplant materials handling is conducive to lowering the cost of the ultimate product. For purposes of discussion, the conveyors are classified according to their use in unloading the various bulk chemicals required by particular types of pulp and paper mills. The advantages and disadvantages of pneumatic conveyors are given, and their application to wood-chip handling and to the unloading and reclaiming of bulk chemicals is described. 12 figures. E.S.

MATERIALS OF CONSTRUCTION

INDUSTRIAL AND ENGINEERING CHEMISTRY. Chemical engineering materials of construction. Ind. Eng. Chem. 44, no. 10: 2285-380 (October, 1952); *cf.* B.I.P.C. 22: 182-3.

The sixth annual review of developments in the use of 11 constructional materials during the past year is presented; the plastics review covers two years. The sections on carbon and graphite, copper, iron, paint, and wood are not included this year. The fourth tabular data compilation gives supplementary data on the physical and chemical properties of molybdenum and several synthetic fibers. The authors and titles of the individual articles are as follows: Fritts, Harry W. Aluminum alloys—76 references, p. 2289-92; Payne, C. R. Cements—94 references, p. 2292-5; Singer, Felix. Ceramics—422 references, p. 2296-308; Fisher, Harry L. Elastomers—183 references, p. 2309-17; Grove, C. S., Jr., Vodonik, Joseph L., and Casey, Robert S. Fibers—179 references, p. 2318-24; Teeple, H. O. Nickel and nickel-base alloys—293 references, p. 2325-38; Kline, G. M., and Seymour, R. B. Plastics—196 references, p. 2339-43; Peters, Henry. Hard rubber—48 references, p. 2344-5; Luce, Walter A. Stainless steels and other ferrous alloys—287 references, p. 2346-59; Nekervis, Robert J. Tin and its alloys—102 references, p. 2360-4; Yntema, L. F. and Bekebrede, Wilfred R. Less common metals—148 references, p. 2364-70; and Grove, C. S., Jr., *and others*. Properties of chemical engineering materials of construction—21 references, p. 2371-80. E.S.

MOLDED PULP ARTICLES

PRENTICE, HOWARD K. Cherries in molded pulp. Modern Packaging 26, no. 2: 95 (October, 1952).

A molded pulp tray (Kare-Ful-Pak Facing Tray) has been developed which permits rapid packing of cherries in symmetrical rows. The tray speeds up hand row-facing by 15 to 20%. 1 illustration. L.C.

NEWSPRINT

CHATURVEDI, M. D. Manufacture of newsprint in India. Indian Pulp and Paper 7, no. 1: 83, 85, 87, 95 (July, 1952).

The possibilities for the erection of an Indian newsprint mill to use the Himalayan coniferous forests are discussed; rough estimates of the cost of manufacture are included. The author arrives at a figure of Rs. 745 per ton, as compared with Rs. 1000 per ton of imported newsprint. 5 tables. E.S.

TIPKA, VERNON L. Newsprint production will meet demand. Southern Pulp Paper Manuf. 15, no. 10: 68 (Oct. 1, 1952).

The author reviews briefly the record of the industry for meeting the increased demand for newsprint, the burden of present taxes, and the high cost of new mill constructions. A modern, integrated, 350-ton newsprint mill is estimated to require a capital of $100,000 to 125,000 per daily ton of production, or a capital investment of $44,000 per employee. Certificates of necessity have been granted to expand the newsprint industry in the United States; the deficit predicted by government agencies for the near future appears to be exaggerated. Substitutes for groundwood pulp, such as bagasse or bamboo, are not expected to play a significant role. E.S.

PACKAGING

ANON. Revised packaging saves International Harvester $30,000 per year. Packaging Parade 20, no. 237: 72-3 (October, 1952).

The use of brown northern kraft envelopes instead of corrugated folders for packaging gasket assemblies cut the cost of the Company's packing operations in half. The new method is described. 6 illustrations. L.C.

FELT, C. E., COOK, F. H., and BORCHARDT, L. F. The determination of a satisfactory type of packaging for the bulk shipment of dehydrated apple slices by freight. Food Technol. 6, no. 10: 390-5 (October, 1952); Modern Packaging 26, no. 2: 133-6, 202 (October, 1952).

Several years ago, General Mills faced the problem of shipping hygroscopic, dehydrated apple slices in bulk from a California supplier to a plant in Chicago. Several packaging possibilities were considered on the basis of performance and economics. Those of a practical nature were subjected to a laboratory examination. This resulted in the selection of a cereal-size container of 275-pound test board sealed with one thickness of 90-pound kraft tape and containing kraft-laminated-to-sulfite bags as moisture-vapor barriers. A cross-country shipping test was set up to verify the laboratory findings. The results of this test led to packaging recommendations used in successful commercial operation. In 3.5 years more than four million pounds of dehydrated apple slices were bulk shipped from California to Chicago at a packaging cost of slightly over one cent per pound of slices. 3 tables and 5 figures. L.C.

HEATON, E. K., and WOODROOF, J. G. Extending candy shelf-life. Food Eng. 24, no. 10: 95-8, 153, 155, 157 (October, 1952).

The results of a study on the factors which influence the shelf life of candy are presented, in which 42 different varieties of candy were packaged in three lots of setup paper cartons with telescopic lids, each carton holding 1.25 lb. of candy. Lot I was not overwrapped, lot II was overwrapped with heat-sealable, moisture-vaporproof waxed paper, and lot III with laminated aluminum foil. The three lots are stored at different temperatures and humidities and are being examined at intervals of three months. The present report includes detailed data on the effect of humidity and wrapper protection, storage temperatures, and addition of antioxidants and humectants obtained after the three- and six-month examinations. Proper packaging was found the most practical way to nullify the ill effects of excessive or too low humidity. Different candies require different humidities during storage; the type of coating of the candy, as well as the required humidity, will determine the need for overwrapping. Regardless of storage temperatures, overwraps had a beneficial effect on candies. There was a greater difference between overwrap and no overwrap than between wax paper and foil. 4 tables, 1 illustration, and 12 references. E.S.

LAWLER, FRANK K. Advances flexible-film packaging with frozen concentrate in bags. Food Eng. 24, no. 10: 74-5, 209 (October, 1952); *cf.* B.I.P.C. 23: 109.

A similar description of the flexible-film packaging of frozen orange juice is given as in the previous reference. 3 illustrations. E.S.

LINK AVIATION, INC. Simplifying the complex. Modern Packaging 26, no. 2: 105-7 (October, 1952).

Military packaging of the Method II (dehydrated) type has been simplified by the Link company, manufacturers of aircraft pilot trainers. The trainer parts are wrapped in layers of greaseproof paper, Kimpak, reinforced aluminum foil (heat-sealed), corrugated cartons with wax shredding, and a final wooden crate. Silica gel is used in the second layer to control humidity, and air is evacuated from the barrier bag with a vacuum hose. 13 illustrations. L.C.

MODERN PACKAGING. Cracker jack. Modern Packaging 26, no. 2: 98-104, 188, 190 (October, 1952).

The development of the triple-sealed cracker jack package from its inception in 1904 to the present is presented. The company's premium-in-the-package selling, packaging design and operation, and quality control methods are described and commended. 15 illustrations. L.C.

PAPER—CONVERSION

DAY, FREDERICK T. Paper conversion and usage. No. 39. Paper and board treatment—punching, press-work, pasting into ply, mounting, etc. World's Paper Trade Rev. 138, no. 9: 661-2 (Aug. 28, 1952); *cf.* B.I.P.C. 23: 46.

A brief outline of the above-mentioned converting operations is given. 1 illustration. E.S.

F. K. Nonuniform paper quality causes troubles during conversion. Allgem. Papier-Rundschau no. 17: 776-7 (Sept. 12, 1952). [In German]

Modern, high-speed, paper-converting machinery places very exact demands on the quality of the paper employed; uniform thickness and strength are particularly essential. The troubles encountered in packaging operations with too thin or too heavy sheets are discussed. The print must not extend to those sections to which the adhesive is applied; it must also be well dried and scuff-proof. Printed sheets must never be stored in high piles which prevents good drying. In addition, modern high-speed packaging machinery requires paper which is very accurately cut to the prescribed size and in the correct direction. E.S.

MARTIN, JOHN W. Bay West Paper Co. builds a combination structure. Am. Paper Converter 26, no. 9: 14-17 (September, 1952).

The Bay West Paper Co., producer of "Mosinee" paper towels, is now occupying a spacious $350,000 one-story structure which was completed in July. The modern combination factory-warehouse-office building is 140 feet wide and 300 feet deep, and is constructed so as to make future expansion of the factory section easily possible. The advantages of the single-story layout are discussed, and the towel production equipment, the conveyor system, the indoor loading docks and truck traffic routes, the machine shop, and the printing department are described. Attractive lounges and locker rooms have been provided for employees. 5 illustrations. L.C.

STOAKES, HAROLD R. Diversification keeps envelope machinery rolling. Am. Paper Converter 26, no. 10: 11-13 (October, 1952).

The Mills Envelope Co., Chicago, avoids long-run jobber orders and concentrates on trade and consumer production by using diversified equipment which manufactures a variety of products. In addition to a large volume of consumer mailing envelopes, the company produces envelopes for small parts and for cosmetics, gummed display pennants and posters, Mail-O-Form sheets, acetate display openings in folding box blanks, and preprinted portfolios and mailing envelopes; it also provides its own printing service and design department. Edge- and strip-gumming machines designed by company engineers are described. 5 illustrations. L.C.

PAPER—MERCHANDISING

PERRY, H. J. Super or robot? Are you ready? Paper Trade J. 135, no. 17: 19-20, 22, 24, 26 (Oct. 24, 1952).

Five authorities in retail merchandising present a panel discussion of the recent trend toward supermarket vending and its significance to the paper trade. The topics and authors are as follows: Weiss, E. B., and Elfenbein, Julien. The shopper-retailer revolution and its impact on manufacturers, p. 19-20, 22; Schreiber, G. R., Elhart, Earl W., and Drake, Lawrence. Solve today's selling problems with new ideas in mechanical vending, p. 22, 24, 26. L.C.

PAPER AND PULP INDUSTRY

ANON. The Finnish paper industry. Indian Pulp and Paper 7, no. 1: 89-92 (July, 1952).

A brief description of the industry is given, including some statistical information. 1 table and 3 illustrations. E.S.

ANON. Paper and board consumption in the United States. Rev. papiers et cartons 15, no. 15 and 16: 575-8 (Aug. 1, 15, 1952). [In French]

Statistical data in metric tons and kg. for the United States paper and board consumption are given; the latest year considered is 1949. 7 tables and 2 diagrams. E.S.

ANON. A review of the Indian pulp and paper industry. Indian Pulp and Paper 7, no. 1: 17-23 (July, 1952).

A review for the year 1951 is presented, including data on production and consumption, labor, transport, markets and prices, the possible manufacture of newsprint, and the operations of a number of individual mills. E.S.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. Commodity report; European pitprop and pulpwood supplies. Unasylva 6, no. 2: 73-8 (June, 1952).

The postwar developments in the European supply of small industrial roundwood and the changes which have occurred in the relationship between pitprop and pulpwood supplies are reported. In general, European production and imports from North America have sufficed, but there is a sharp need for spruce pulpwood. The 1951 European production of pitprops and pulpwood was 7.8 million cu.m. more than in 1950, but 2.4 million lower than the 1935-38 average; Sweden and Finland accounted for 23.1 million cu.m. of the 37.8 million total pulpwood production in 1951. Annual production listed according to countries, the stock of pitprops on hand at present, European imports and exports, and the development of prices are presented in tabular form and discussed. The prices of the two commodities—which have risen considerably—are almost at the same level and seem to be remaining firm. New difficulties in several supply-influencing areas suggest that, despite the satisfactory supply position at the end of 1951, no large exports of roundwood from the eastern European countries can be expected. 8 tables. L.C.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. Increased production of pulp and paper. Unasylva 6, no. 2: 79-80 (June, 1952).

A brief summary of the program of the organization and achievements to date is given. E.S.

NOSSEN, ØYVIND. The wood-conversion industry in Norway. Rev. papiers et cartons 15, no. 15 and 16: 579-80 (Aug. 1, 15, 1952). [In French]

Statistical data for the Norwegian groundwood, chemical pulp, and paper and board industries for 1951 are given. 2 illustrations. E.S.

OGDEN, A. G. The paper and pulp industry in Norway. Indian Pulp and Paper 7, no. 1: 94-5 (July, 1952).

A brief outline of the Norwegian industry is given, including some statistical information. 1 table. E.S.

SOUTHERN PULP AND PAPER MANUFACTURER. Regional wood pulp production. Southern Pulp Paper Manuf. 15, no. 10: 212-14 (Oct. 1, 1952).

Statistical data on the U. S. regional wood-pulp production for the period 1920-50 are given in graphs and supplemented by tabular data for 1951 and the first six months of 1952. 7 tables and 6 graphs. E.S.

STEVENSON, LOUIS T. Growth and importance of the southern pulp and paper industry. Southern Pulp Paper Manuf. 15, no. 10: 215-19 (Oct. 1, 1952).

The southern pulp and paper industry has enjoyed a rapid expansion in the past 20 years, based upon a relatively abundant supply of softwoods; it now produces over half of the wood pulp and over a third of the total paper and board made in the United States. Detailed data on the industry of 12 southern states are presented in tables and graphs; the importance of the industry to the region and the entire United States economy is emphasized. A long-range view taken in the Paley Report indicates an expected U. S. production in 1975 of 28 million tons of wood pulp and 45 million tons of paper and board; at its present share of the U. S. total, the South's quota in 1975 would be 15.4 millions tons of wood pulp and about the same volume for paper and board. Southern woodlands as a whole are claimed to be only 50% productive at present. Further expansion will be conditioned on the intensive development of sound forestry practices, particularly by the small woodlot owner, the use of hardwoods, and the development of new pulping processes. 2 tables, 2 graphs, and 7 references. E.S.

PAPER AND PULP INDUSTRY—EDUCATION

BOROUGH POLYTECHNIC. Paper trade education. World's Paper Trade Rev. 138, no. 12: 864, 866, 868 (Sept. 18, 1952).

The syllabus for the classes in paper technology for the 1952-53 session is given; the classes are held under the Department of Chemistry and cover commercial paper, paper merchanting, and paper technology. E.S.

CITY AND GUILDS OF LONDON INSTITUTE. City and Guilds examinations on papermaking. Paper-Maker (London) 124, no. 3: 208, 210-11 (September, 1952); World's Paper Trade Rev. 138, no. 11: 784, 786 (Sept. 11, 1952); *cf.* B.I.P.C. 22: 509.

The regulations and syllabuses for the year 1952-53 are given. E.S.

LONDON SCHOOL OF PRINTING AND GRAPHIC ARTS. Paper trade education. World's Paper Trade Rev. 138, no. 10: 708, 710, 712 (Sept. 4, 1952).

The syllabuses for the courses in paper technology, paper merchanting, and technical science for papermakers and merchants for the 1952-53 session are outlined. E.S.

PAPER AND PULP INDUSTRY—PUBLIC RELATIONS

VAILLAND, GENEVIÈVE. Successful human relations. Rev. papiers et cartons 15, no. 18: 665-7 (Sept. 15, 1952). [In French]

The development of a successful public-relations program at the French paper mills of Papeteries de Ruysscher with two plants is outlined. 2 illustrations. E.S.

PAPER AND PULP MILLS

ANON. International's Gatineau mill boosts quality and output. Paper Ind. 34, no. 7: 850-4 (October, 1952).

The expansion and improvement program throughout the newsprint mill of the Canadian International Paper Co. at Gatineau is described; the mill averages now 875 tons of newsprint and 200 tons of dissolving and bond types of bleached sulfite pulp per day. 11 illustrations of the equipment. E.S.

EVANS, JOHN C. W. The story of Elk Falls Company. Pulp Paper Mag. Can. 53, no. 10: 109-58, 182-4 (September, 1952); *cf.* B.I.P.C. 23: 114.

The author, who was present at the opening of the new Elk Falls Company newsprint mill on Vancouver Island, describes the mill's layout, equipment and operations in an article composed of the following parts: Official opening of Canada's newest mill, p. 109-12; Prominent men in the industry, p. 113; An overall summary p. 114-23; The John Hart power development, p. 124-5; The woodroom at Elk Falls, p. 126-31; The groundwood mill at Elk Falls, p. 132-7; The paper mill at Elk Falls, p. 138-45; Finishing and warehousing at Elk Falls, p. 146-8; The shipping operations at Elk Falls, p. 149; The steam plant at Elk Falls, p. 150-3; The water supply system at Elk Falls, p. 154-5; and The electrical system at Elk Falls, p. 156-7. Page 158 is a montage entitled: A portfolio of Elk Falls photos. The final article of the series, Getting pulpwood for Elk Falls, p. 182-4, is by R. J. Filberg (*cf.* B.I.P.C. 23: 171). Numerous illustrations, flowsheets, and tables appear throughout the article. L.C.

FIBRE CONTAINERS. St. Regis completes Pensacola expansion. Fibre Containers 37, no. 9: 56, 61-2 (September, 1952); *cf.* B.I.P.C. 23: 35.

A similar description as in previous references is given. 5 figures. E.S.

PULP & PAPER. Operations in Mexico. Pulp & Paper 26, no. 11: 71-2 (October, 1952).

A report on some Mexican pulp, paper, and board mills is presented. 8 illustrations. E.S.

PAPER AS A TEXTILE MATERIAL

SCOTT, RICHARD C. Paper-fabric manufacturing needs close quality controls. Textile World 102, no. 10: 137, 139, 141, 282 (October, 1952).

Although much of the machinery found in the plant of the Wortendyke Mfg. Co. is similar to that used in other textile mills, special paper-fabric

quality-control techniques had to be developed which would not be used in other textile manufacturing operations. The outstanding problem in processing paper into finished woven fabrics center around the atmospheric conditions for the various processes, the tensions and settings used, and the weight and quality of the paper stock. Because paper yarn is bulky and somewhat uneven, it can easily get out of hand as regards size and appearance. A system of identification marks or tags was developed for checking carefully the work of each individual operator. The different steps involved in processing and weaving paper yarns are outlined in a number of illustrations with explanatory captions. Rugged materials-handling equipment is used wherever possible. 12 illustrations and a sample of the two sides of a tag which accompanies the roll until the finished fabric is given the final inspection and wrapped for shipment. E.S.

PAPER BREAKS

ANON. New brain can predict effect of "pull" in paper web. American Boxmaker 41, no. 10: 16 (October, 1952)

A new electronic computing machine developed by Goodyear Aircraft Corp., Akron, Ohio is a "thinking machine" which is not only capable of supplying the answers to machine inefficiency, but can also predict, to an accurate degree, the breaking point of paper, plastics, and other materials. The L3 GEDA (Goodyear Electronic Differential Analyzer) is described, and its application to a variety of industries is indicated. 1 illustration. L.C.

PAPER FINISH

LEIDL, E. Linen finish. Allgem. Papier-Rundschau no. 14: 634-5 (July 26, 1952). [In German]

The production of genuine and imitation linen finish between sheets of linen cloth or by embossing with a steel roll engraved to simulate the surface of linen cloth is described briefly. Reference is also made to transparent effects produced by an embossing calender with three rolls, of which the engraved roll is heated to approximately 50°C. E.S.

PAPER MACHINE OPERATION

THOMPSON, L. P. Fourdrinier table arrangement and tissue machine operation. Tappi 35, no. 10: 105-6A (October, 1952).

This is a summary of the round-table discussion held by the Tissue Subcommittee of the Fourdrinier Papermaking Committee; it was based on the answers to a questionnaire survey including data on table rolls, deflectors, suction boxes, headbox consistencies, wires, wire showers, weights, and speeds. E.S.

PAPER MANUFACTURE

ANON. The A B C of papers and boards. Papetier 6, no. 9: 101, 103 (September, 1952). [In French] *cf.* B.I.P.C. 23: 36.

The price and quality of paper 100 years ago are discussed; mention is also made of the indispensability of paper, the folding of paper, and the manufacture of school notebooks from ruled, folded sheets, one inserted into the other. E.S.

PAPER SIZING

ARLOV, A. P., and JANSEN, O. The influence of sunlight on the sizing degree of paper. Norsk Skogind. 6, no. 9: 264-8 (September, 1952). [In Norwegian; English summary]

The decrease in the sizing degree (I) of paper which has been exposed to sunlight has been examined. Back (*cf.* B.I.P.C. 22: 168) has recently demonstrated that the decrease is caused by rays in the ultraviolet range. Heat radiation, infrared light, or moist atmosphere, on the other hand, has no pronounced effect on (I). In agreement with practical experience, the (I) of a paper sized with free rosin (Bewoid) is more apt to be affected by ultraviolet radiation than when a fully saponified rosin size (Delthirna) is employed. It is generally accepted that the decrease in (I) of a paper exposed to sunlight is caused by the oxidation of the rosin acid and rosin-acid salts. Attempts to prevent this oxidation by the addition of different inhibitors to the pulp were unsuccessful; the following inhibitors were tried: diphenylamine, 2-naphthol, ascorbic acid, sodium alginate, Urecoll P, resorcinol, pyrogallol, hydroquinone, diphenylamine plus 2-naphthol, and cobalt chloride. 3 tables and 2 figures. E.S.

PAPER SPECIALTIES

ALLGEMEINE PAPIER-RUNDSCHAU, O. T., and VOGEL, PAUL. Uniform definitions for creped papers. Allgem. Papier-Rundschau no. 9: 423; no. 15: 681; no. 16: 721-2 (May 12, Aug. 12, 26, 1952). [In German]

The need for exact definitions of the terms wet- or water-creped (I), dry-creped (II), machine-creped (III), double-creped (IV), and embossed-creped (V) is pointed out, and comments and suggestions by experts are solicited. According to Vogel (who gives detailed descriptions of the various processes), (I) and (II) are converting operations produced upon separate machines; (III) refers to creping on the paper machine, irrespective of the exact location where it is performed; (IV) refers to paper with creping in both directions (machine and cross-machine directions), whereas (V) is produced upon an embossing calender and should not be classified with creped paper; it has a crepelike appearance, but not the properties (extensibility) of genuine creped paper. E.S.

ANON. Protective packing materials. Paper Sales 12, no. 10: 12-14 (October, 1952).

The packing-materials salesman can increase his sales volume considerably if he becomes familiar with all the properties of his products, aware of his customers' shipping problems, and willing to act as a counselor on choosing the right material. Fourteen principal protective packing materials are listed, and 10 of them are described. 2 illustrations. L.C.

ANON. This 1952 free dinner pail has nothing to do with politics. Packaging Parade 20, no. 237: 147-9 (October, 1952).

Examples are given of some famous restaurants and caterers which have undertaken large-scale send-out luncheon service. The paper specialties which such a service requires are described. 2 illustrations. L.C.

CRAIG, F. A. Paper and boards: varieties and uses. Paper & Print 25, no. 3: 324, 326, 328 (Autumn, 1952).

The author discusses the possible classification of papers and boards according to their fibrous composition, color, sizing, substance, formation, watermarks, and finish. E.S.

DAY, FREDERICK T. Paper conversion and usage. No. 40. Table and picnic stationery. World's Paper Trade Rev. 138, no. 11: 791-2, 794 (Sept. 11, 1952).

The possibilities of such paper items as plates, trays, drinking cups and food containers, straws, napkins, table covers, doilies, jelly cases, and similar items are discussed, with particular reference to the forthcoming Coronation. 3 illustrations. E.S.

DILLING, C. L. Waxed paper usage climbs in 75th year. Pulp & Paper 26, no. 11: 82, 84, 86 (October, 1952).

With reference to the 75th anniversary of the discovery of waxed paper by Thomas A. Edison, the phenomenal growth of this branch of the paper industry since that time is mentioned. Current estimates indicate that waxed paper products will amount to better than 5% of the total dollar volume of the industry. The author then discusses the significant factors which should receive consideration prior to the decision for a new mill construction (raw materials, water, labor, taxes, capital funds, and a good site); this discussion is generally applicable to the erection of any new pulp and paper mill and not specifically restricted to the manufacture of waxed paper. 2 illustrations. E.S.

E. S. Offset print and paper. Allgem. Papier-Rundschau no. 12: 560 (June 26, 1952). [In German] *cf.* B.I.P.C. 22: 682.

Supplementing the discussion by Garter concerning printing difficulties with defective paper, the author suggests trials in German printing plants with mill-preconditioned paper delivered in waxed wrappers; the need of suitable body papers for subsequent lacquering or printing with bronze powders is also mentioned. E.S.

OSBORNE, K. W. Paper characteristics for laminating. Southern Pulp Paper Manuf. 15, no. 10A: 24-6 (Oct. 10, 1952).

The author discusses the reasons for laminating (to increase the thickness, rigidity, or strength of the sheet; to alter its surface characteristics; or to impart special properties, such as moisture-vapor transmission), the desirable properties of the ply material (proper surface, strength, moisture content, uniform caliper, and freedom from holes), some of the difficulties encountered in laminating (poor bonding, end and cross-grain curl, and troubles from off-caliper materials), and means for minimizing such troubles. E.S.

PAPER STORING

ANON. Paper and board specified as inflammable. Indian Print & Paper 18, no. 1: 25-7 (July, 1952).

A West Bengal Government notification specified paper, cardboard, and pressed paperboard as inflammable articles within the local fire services act, which imposes a heavy license fee on the storage of such articles. The protest by interested parties is printed. E.S.

PHYSICAL TESTING—FASTNESS TO LIGHT

MILLER, O. E. Integrating light meter for fading tests. J. Optical Soc. Am. 42, no. 9: 661-2 (September, 1952).

The instrument is designed to use only commercially available components; it is rugged and dependable. The d.c. measuring circuit is linked mechanically to the a.c. integrating circuit by means of a self-balancing potentiometer servo system. The time integral of the intensity is accumulated on a commercial kw.-hr. meter. The linearity and accuracy are better than 1% of the full registration rate. 5 figures and 3 footnotes. E.S.

PHYSICAL TESTING—PAPER—FORMATION

BRECHT, WALTER, and WESP, ADAM. The measurement of the cloudiness of paper. Das Papier 6, no. 17/18: 359-67; no. 19/20: 411-15 (September, October, 1952). [In German]

Following a brief description of the sheet formation testers by Agahd (*cf.* B.I.P.C. 11: 282) and Davis, Roehr, and Malmstrom (*cf.* B.I.P.C. 5: 339), an instrument developed by the authors at Darmstadt is described in some detail, which measures not only the intensity but also the distribution of the clouds; from the readings a cloudiness diagram can be prepared which conforms to the visual impression of cloudiness. To control the accuracy of the new procedure, papers with graded, artificial cloudiness were prepared and measured; a comparison was also made with the results of visual gradings of 10 papers sent to a number of different mills; the agreement was satisfactory. The increasing degree of cloudiness of the 10 graded samples is also shown in 10 contact photographs; these, however, required expert, individual photographic treatment (paper, exposure, and development) for satisfactory results so that this method cannot be recommended as a simple routine substitute for the instrument readings. Several applications of the instrument are described to illustrate its possibilities in laboratory and mill work. In all sample sheets prepared from different fibers at low and high consistencies, the former gave the lower cloudiness readings, irrespective of furnish, provided the pulps were free; the influence of pulp consistency on cloudiness decreases with progressive beating. The favorable influence of the woven dandy roll on sheet formation established by Kilpper (*cf.* B.I.P.C. 22: 584) could be checked by means of the instrument. A comparison of the cloudiness of a group of newsprint papers is also given. The final stage of the new development will be its application to the continuous measurement of cloudiness of the running paper web; this method, however, is not yet ready for discussion. 17 figures and 10 references. E.S.

PHYSICAL TESTING—PAPER—GLOSS

HUNTER, RICHARD S. A new dust compensated Gardner 75° gloss recorder. Paper Mill News 75, no. 42: 112, 114-15 (Oct. 18, 1952); Am. Paper Converter 26, no. 10: 20, 22, 25, 58 (October, 1952).

The author describes a gloss recorder consisting of a photoelectric sensing unit which may be mounted over a moving web of paper and a sensitive electronic measuring unit which receives and records the photoelectric signals received from the sensing unit. The instrument is designed to measure 75° specular gloss according to TAPPI method T 480 m-51, which was originally developed for measuring the gloss of coated book paper but which is also useful for waxed, glassine, and printing papers in the same range of shininess. Possible applications of the instrument are outlined. A table listing the different methods of gloss measurement which have been standardized by technical organizations in this country is included. Gloss recorders similar to the present one, except for geometric design of the sensing unit, could be built to measure the gloss of bond or uncoated book papers, newsprint, and the like. These low-gloss papers are not satisfactorily differentiated with the 75° method. 2 tables, 2 figures, and 1 reference. E.S.

PHYSICAL TESTING—PAPER—PICK RESISTANCE

ARNAMO, A., OLSSON, I., and PIHL, L. A new method for testing the surface strength of paper (by means of a Schopper tensile strength tester). Svensk Papperstidn. 55, no. 18: 709-14 (Sept. 30, 1952). [In English; Swedish summary]

A new method for testing the surface bonding strength (pick resistance) (I) of printing papers is described. The method measures the maximum force needed to split the surface layer of the paper with the aid of a cellophane tape at a fixed tension and speed by means of a Schopper tensile-strength tester. The readings obtained give a value of (I) of a tested paper and indicate its tendency for picking in a printing press. It was found that (I) is generally largest in the machine direction of the paper; hence, there is less risk for picking by printing the paper in this direction. The advantages and limitations of the new Graphic Arts Laboratory (GFL) procedure are mentioned; it is applicable to all papers, although the results obtained with coated papers must be judged cautiously. Dusting caused by loose fibers cannot be evaluated by this method. Various papers were classified according to their (I) by Dennison waxes and the new GFL method, and a good agreement was obtained. The new method has the advantage of characterizing the properties of different papers on a continuous scale; it also indicates the (I) of a paper in the different directions of the sheet. 2 tables, 7 figures, and 10 references. E.S.

PHYSICAL TESTING—PAPER—TENSILE STRENGTH

BEKK, JULIUS. The determination of the tensile strength of paper under static and dynamic loads. Rev. papiers et cartons 15, no. 18: 663-4 (Sept. 15, 1952). [In French] *cf.* B.I.P.C. 22: 195.

The tensile strength tester developed by the author and its mode of operation are described. 3 diagrams. E.S.

HARDACKER, KEITH W., WINK, W. A., and VAN DEN AKKER, J. A. Instrumentation studies. LXXV. The automatic recording of the load-elongation characteristics of paper. I. The STFI "stress-strain recorder." Tappi 35, no. 10: 117-24A (October, 1952); *cf.* B.I.P.C. 23: 117-18.

Following a brief description of the STFI "stress-strain recorder" (*cf.* B.I.P.C. 18: 542-3), the results of a general inspection of the instrument are discussed. Many of its features are good and well planned. The recording drum is of ample size and so designed that handling of the drum, chart paper, and other matters relating to routine testing may be done with facility. The course of a recording may be controlled, at will, from the control panel by the simple pushing of bottoms or, alternatively, the direction may be reversed by presetting the switches operating on either load or elongation. The instrument is adequately protected by means of several limit switches, and the machine turns itself off at the conclusion of a test. Some of the observed errors of design or of construction are of the kind which one normally expects to find in an instrument which has not long been in production, but may easily be eliminated in new issues. Without correction, these errors could have resulted in serious discrepancies. The errors and their correction (where feasible for the purposes of this study) are described in detail. Load-elongation curves were obtained for a series of papers by means of both the STFI load-elongation equipment and the Baldwin-Southwark universal testing machine, with the latter operating at the same span and rate of elongation. The means of the curves were observed to be in generally good agreement; the differences were accountable by sample variability. 3 tables, 10 figures, and 10 references. E.S.

PHYSICAL TESTING—PAPER BAGS

RAGOSSNIG, LUDWIG. Dynamic strength testing of bag papers. Das Papier 6, no. 19/20: 407-10 (October, 1952). [In German] *cf.* B.I.P.C. 22: 848-9.

Essentially the same information is given as in the previous reference,

including a description of the FRAG-Test-instrument (constructed by Karl Frank, Weinheim, Germany). 8 figures. E.S.

PLASTIC FILMS—TESTING

PACKAGING INSTITUTE. Test methods for plastics. Modern Packaging 26, no. 2: 137-40, 211, 213 (October, 1952).

The following tests for the conditioning and accelerated-age testing of plastics and plastic films have been proposed: PI Films & foils 4p-51, testing accelerated aging of plastics; PI Films & foils 1p-51, conditioning plastics for testing. The testing methods (which have been adapted from ASTM procedures) are described in detail. 1 table and 7 footnotes. L.C.

PLASTIC FILMS (NONCELLULOSIC)

OSWIN, C. R. Protective wrappings. Brit. Packer 14, no. 2: 28-32; no. 3: 28-31, 37; no. 4: 24-8, 38; no. 5: 26-9, 36; no. 6: 24-8; no. 7: 30-2; no. 8: 23-5, 44; no. 9: 28-30, 53 (February-September, 1952).

The first section of this extensive survey deals with the manufacture, testing, and properties of various wrapping materials, including cellulose derivatives (plain and coated papers and cellulosic films), alginate films, rubber derivatives, and synthetic polymers (polyethylene, polyvinyl chloride and its copolymers, and condensation polymers, such as nylon and Terylene). In conclusion, tests for the identification of the different types of films are considered briefly. 10 tables, 15 diagrams, 6 illustrations, and 127 references. E.S.

STENERSON, HARRY. Behind the markets. Chem. Eng. News 30, no. 43: 4572 (Oct. 27, 1952).

The rising demand for packaging and container production makes it necessary to lean upon synthetic resins for many jobs. Polyethylene competes successfully as a coating material with petroleum waxes; it is often combined with paraffin to form moistureproof coatings. The rise in demand for cellophane is also becoming noticeable, but the demand for polyethylene film promises to surpass it. However, the costs and properties of the various films will ultimately determine their popularity, and cellulose esters, styrene, styrene-derived resins, vinyls, rubber hydrochloride, and alkyds may gain ascendency. Their properties and relative merits are discussed. 2 bar graphs. L.C.

PRINTING AND PRINTER'S INK

ALDERSON, A. J. Paper and the printer. Paper & Print 25, no. 3: 283-4, 286, 289-90, 292, 294 (Autumn, 1952).

The author describes the reasons why paper difficulties experienced by the printer have not ceased with the end of wartime shortages and restrictions but continue to present themselves when supplies have become more plentiful. The inherent properties of vegetable fibers, the usual rush conditions associated with printing orders, and the incorrect handling of paper are given as some of the sources of trouble and are discussed quite at length. E.S.

ANON. Printing on matt art paper. Indian Print & Paper 18, no. 1: 41 (July, 1952).

Useful directions for printing on this type of coated paper are given. E.S.

WILLIAMS, A. E. Fluorescent inks. World's Paper Trade Rev. 138, no. 13: 970-2 (Sept. 25, 1952).

Following a brief introduction on the scientific use of fluorescence phenomena for signalling or display devices, the manufacture of Day-Glo inks from strongly fluorescent dyes blended with synthetic resins (urea- or melamine-formaldehyde) and dispersed in a water-white, ultraviolet, transparent varnish and methods of testing the inks are described. Purity of the dyes is essential; the type of medium employed is of great importance. It must have the highest possible ultraviolet transmission, as nearly as possible the same refractive index as the synthetic resins used, and it must not yellow on exposure to daylight, as otherwise the ultraviolet rays will be filtered out. 2 illustrations. E.S.

PRINTING AND PRINTER'S INK—BRAILLE

ANON. Unique printing unit to produce solid dot Braille. Paper & Print 25, no. 3: 332, 334, 336 (Autumn, 1952); *cf.* B.I.P.C. 23: 42.

Essentially the same information is presented as in the previous article. 4 illustrations. E.S.

PRINTING AND PRINTER'S INK—ODOR TROUBLE

FÜHLER, WOLFGANG. Odorless printing inks. Allgem. Papier-Rundschau no. 18: 815-17 (Sept. 26, 1952). [In German]

The author discusses the different possibilities for the formation of objectionable odors in printed packaging materials which may be traced to either the paper, board, adhesives, printing inks, lacquers, vehicles, driers, antioffset sprays, or the incorrect combination of some of these. When odorless printing is essential, the printer must be informed so that he can make a careful selection of all materials and printing and conversion processes. E.S.

PRODUCTIVITY

BASBERG, A. Conditions in the American pulp and paper industry as seen by a plant engineer. Norsk Skogind. 6, no. 9: 269-77, 279-81 (September, 1952). [In Norwegian; English summary]

As a member of a Norwegian productivity team visiting the United States, the author studied 14 pulp and paper mills in different regions. He records his impressions with particular emphasis on problems of organization, management, and working conditions, which may have received insufficient consideration in the Norwegian pulp and paper industry in the past and which could profitably be applied for increasing the productivity of the mills. 1 table. E.S.

PULP DRYING

INGMANSON, WILLIAM L. An investigation of the mechanism of water removal from pulp slurries. Tappi 35, no. 10: 439-48 (October, 1952).

An equation expressing the filtration resistance (defined according to conventional concepts of average specific resistance) of compressible materials as a function of specific surface, effective specific volume, compressibility, and frictional pressure drop has been derived. The basic assumption in the derivation was that the classical Kozeny-Carman equation, designed for use in static studies, would apply to the dynamic case of a constant-pressure filtration, provided it was written in a differential form and properly integrated. By the combined use of experimental data obtained in dynamic and static studies of bleached sulfite pulps, the validity of the integrated Kozeny-Carman equation was established. It was concluded that average specific filtration resist-

ance is directly proportional to the product of the Kozeny constant and the square of the specific surface, and is related to the frictional pressure drop by a complex porosity function which is dependent upon the effective specific volume and the compressibility of the material in question. 6 tables, 5 figures, and 25 references. E.S.

RADIOACTIVITY

FEARNSIDE, K. The industrial uses of radioactive materials. Chemistry & Industry no. 38: 920-2 (Sept. 20, 1952).

Among different applications listed are several used in the paper industry, including the thickness gage, the examination of sealed packages to determine the correct amount of filling, and the elimination of static electricity. 1 table and 4 figures. E.S.

INDUSTRIAL NUCLEONICS CORPORATION, *Columbus, Ohio.* Manning uses nuclear energy to improve plant production. Paper Mill News 75, no. 42: 90 (Oct. 18, 1952).

The installation of an AccuRay beta gage for the control of basis weight in the manufacture of rope-content papers for industrial uses at the John A. Manning Paper Co., Inc., Troy, N.Y. is described. 2 illustrations. E.S.

INDUSTRIAL NUCLEONICS CORPORATION, *Columbus, Ohio.* Nuclear energy controls carbon coating. Am. Paper Converter 26, no. 10: 17 (October, 1952).

AccuRay beta-gage equipment employing Sr^{90} in a capsule measures the exact amount of carbon being applied to the carbon tissues and records it on a chart calibrated in pounds per ream. The nuclear principle of electron bombardment which is involved is explained. Plans are being made to use the AccuRay with a direct control mechanism which will make automatic coating adjustments. 1 illustration. L.C.

RAW MATERIALS

IYENGAR, N. K. SESHADRI. Paper made from the flosses of *Cryptostegia grandiflora.* Indian Pulp and Paper 7, no. 1: 81-2 (July, 1952).

The possibilities of the seed floss of the rubber creeper (*Cryptostegia grandiflora*), a wild-growing hedge creeper indigenous to India, as a suitable raw material for a village industry are discussed. 2 tables. E.S.

SALESMEN AND SALESMANSHIP

KENNING, W. A. What a salesman should look for in the mill. World's Paper Trade Rev. 138, no. 9: 635-6, 638, 640 (Aug. 28, 1952).

Prior to a visit to the Star Paper Mills, makers of Massey-coated paper, by participants in a sales convention, the author described some of the special features of particular interest to printers, including constant atmospheric conditions during papermaking and coating, the maintenance of uniform smoothness by precalendering and supercalendering, and the use of the Testoprint machine (a rotary printing machine which can be adjusted to letterpress, offset litho, and photogravure) for checking the smoothness. The only convincing test of the smoothness of a paper is to print it, preferably by the process for which it is being made; the use of the Testoprint machine provides this possibility. 1 illustration. E.S.

PISER, LOUIS. The salesman of promise. Paper Sales 12, no. 10: 16-17 (October, 1952).

The author advises sales managers to choose young college graduates for their sales departments. No amount of training and pep talks will make a salesman out of one who does not already possess an inquisitive mind, ambition, and an energetic personality. There is little chance that such an individual will be found in the company warehouse. L.C.

SEMI-CHEMICAL PULPING PROCESS

CONVERSE, C. WILLIAM. Trends in semi-chemical pulping. Pulp Paper Mag. Can. 53, no. 10: 160-1 (September, 1952); *cf.* B.I.P.C. 22: 854.

The expansion of semichemical pulping from corrugated-board pulp to fine paper and newsprint pulp is described. Pulp characteristics, the flexibility of the process in regard to the quality of the pulp produced, and future trends in the use of bleached and unbleached hardwood semichemical pulps are discussed. E.S.

PULP & PAPER. Semi-chemical plant at Groveton mill, New England's first. Pulp & Paper 26, no. 11: 40-2, 44, 46 (October, 1952).

The new semichemical plant of the Groveton Paper Co. at Groveton, N.H. is described which uses the neutral sulfite process for the pulping of hardwoods. The operations are entirely separate from those of the regular sulfite mill. The pulp is used for the manufacture of 9-point corrugating medium on the rebuilt No. 3 machine. Other improvements of the mill are listed which is one of the most diversified producers in the industry, making facial and toilet tissue, envelopes, writing papers, napkins, towels, waxed papers, soap wrappers, drawing papers, and papers for drinking cups. 26 illustrations of the mill and equipment. E.S.

STEVENS, R. H. Recent developments in high-yield pulping. Fibre Containers 37, no. 9: 52, 54 (September, 1952).

The suitability of high-yield alkaline and semichemical neutral sulfite processes for pulping hardwoods and conifers for different purposes is outlined briefly. E.S.

SETUP BOXES

FRA. Calculations for cardboard boxes (XVI). Allgem. Papier-Rundschau no. 12: 553-5 (June 26, 1952). [In German] *cf.* B.I.P.C. 22: 855.

With reference to No. IV of this series (*cf.* B.I.P.C. 21: 491) concerning a cheap, hinged-lid, shouldered setup box with five partitions for the packaging of ampoules, another calculation has been prepared in which the manufacture of large quantities of such boxes (involving repeat orders) at a lower price is considered. 2 tables and 1 figure. E.S.

FRA. Calculations for cardboard boxes (XVII). Allgem. Papier-Rundschau no. 14: 635-7 (July 26, 1952). [In German]

A sample calculation is presented of the cost (in Germany) of an oval gift box for cosmetics with hinged lid and cutout insert to accommodate two round cakes of soap, two tubes in folding boxes, and one perfume bottle. 2 tables and 1 illustration. E.S.

SHIPPING CONTAINERS

ANON. New Gaylord corrugated container holds 2400 pounds of rubber. American Boxmaker 41, no. 10: 22 (October, 1952); Fibre Containers 37, no. 10: 80-1 (October, 1952); Packaging Parade 20, no. 238: 136 (November, 1952); Chem. Processing 15, no. 11: 91 (November, 1952).

Gaylord Container Corp. has developed a new corrugated shipping container which can support 2400 pounds of synthetic rubber (32 bales). Made of 100% corrugated board with no reinforcing tapes or steel strapping and wire, the carton is built up from a base tray with three subsequently added sleeves. Each sleeve adds to the height of the box and increases its strength as layer after layer of rubber are packed. The cost-cutting advantages of the container are emphasized. 4 illustrations. L.C.

SHIPPING CONTAINERS—MULTIWALL BAGS

ANON. Multiwall bags at St. Regis. Can. Pulp Paper Ind. 5, no. 10: 16-18, 21 (October, 1952).

An illustrated description of the new multiwall bag plant and equipment of the St. Regis Paper Co. (Canada) Ltd. at Dryden, Ont. is given. The kraft paper for conversion is bought from the adjacent mill of the Dryden Paper Co. A steam-heated passageway connects the paper mill with the bag plant to protect the paper from Ontario weather and speed delivery. About 8000 tons of natural kraft will be converted into multiwall bags on the two tube-forming lines per year. The plant can ultimately accommodate three tubing units. 7 illustrations. E.S.

ANON. New iced corn bag of wet strength paper used for shipments of New Jersey sweet corn to New York. Am. Paper Converter 26, no. 9: 74 (September, 1952).

Bags made from three layers of wet-strength paper with perforations to act as drains are being used in the packaging of iced sweet corn. Fifty-three ears of corn in each bag are kept fresh from farm to market by 20 pounds of ice. 4 illustrations. L.C.

SLIME PREVENTION

COHEN, SYLVAN I., and KALM, MERCINE. A method of laboratory evaluation of chemicals as potential slimicides. Tappi 35, no. 10: 448-54 (October, 1952).

In the initial screening of chemicals as potential slimicides, frequent variability of antiseptic data has been encountered from test to test. Using standard methods, it is often impossible in the laboratory to distinguish between such variability and any intrinsic toxicity associated with the chemical structure of similar compounds. This was found to be especially true for mercurials. To reduce this variation, the standard Petri plate method of Appling and McCoy (*cf.* B.I.P.C. 15: 72-3) was modified to improve the accuracy of several steps by standardization of the inoculum to one million organisms per ml.; thorough mixing of the chemical and melted agar in test tubes before pouring the plates; addition of inoculum to cooled melted agar instead of surface streaking; and extremely accurate dilutions of the chemical. In spite of these modifications, no significant improvement occurred in accuracy and reproducibility. This suggested that the type of medium is an important factor. A synthetic liquid medium was adopted and used in a test-tube technique. One ml. of a dilution-series of the chemical is added to 9 ml. of the medium, followed by 0.1 ml. of inoculum. The tubes are agitated by hand at fixed intervals or continuously on a shaketable. After 24 and 48 hours of incubation,

turbidimetric measurements are made which yield germistatic data. Information about germicidal action and killing-time are obtained by combining the chemical dilutions with the inoculum for arbitrary time intervals before loop transfers are made to media tubes. The latter procedure also permits the evaluation of chemicals that cannot be added directly to the synthetic medium. The above technique has proved reproducible and accurate at least to 7.7% with compounds that could not be assayed by the plate method. Three bacteria and one fungus have been employed satisfactorily as screening organisms to date. The new method offers the possibility of developing dosage-response data for interpreting the dynamic relations between micro-organisms and antiseptics. 8 tables, 1 figure, and 6 references. E.S.

SORGHUM VULGARE

CHITTENDEN, A. E., COOMBER, H. E., and MORTON, D. Sorghum stalks from the Gold Coast as a paper-making material and as a source of furfural. Colonial Plant and Animal Products 2, no. 4: 299-305 + 2 plates (1951).

Soda pulping and bleaching trials for assessing the chemical and paper-making properties of sorghum stalks have shown that the material will produce a satisfactory yield of easily bleached, moderately strong, short-fibered pulp. Fairly severe cooking conditions are required and the chemical consumption is rather high; the strength of the pulps was not appreciably increased by beating. It appears that bleached sorghum pulp could be utilized as a filler for incorporation in longer-fibered paper furnishes. Although the α-cellulose content is not the only criterion as to its suitability for viscose manufacture, the low value obtained in the present samples appears to make the application of sorghum for dissolving pulps unlikely to be an economic proposition. Since the pentosan content of the sorghum stalks is relatively high, the commercial production of furfural from this material might have economic possibilities. However, this will depend on the quantity available for this purpose, procurement and transportation costs, adequate and cheap water and fuel supplies at the plant, and similar factors. 5 tables and 2 figures. E.S.

SOUNDPROOFING

CELOTEX LIMITED, *London*. Quiet please! Deterrent effect of noise and its elimination. World's Paper Trade Rev. 138, no. 9: 670-2 (Aug. 28, 1952).

The improvement in acoustical conditions in noisy factories through the insulation of walls and ceilings with Acousti-Celotex porous tiles is described by examples. 4 illustrations. E.S.

STATIC ELECTRICITY IN PAPER

DAY, FREDERICK T. Static electricity in paper. Paper & Print 25, no. 3: 322, 328 (Autumn, 1952).

The origin of static electricity in paper, its harmful effect with particular reference to letterpress printing, and means for its elimination are discussed very briefly. E.S.

STATISTICAL METHODS

SOOY, B. E. Quality control in the board mill. Paper Mill News 75, no. 42: 106-8, 110, 138 (Oct. 18, 1952); *cf.* B.I.P.C. 21: 804-5; 23: 18-19.

Statistical quality control is a management tool which, when properly used, will go far to help the paper board industry meet the ever-increasing demands

placed upon it. In the last quarter century printing speeds have increased 400% and packaging-machine speeds 300%; even greater speeds may be anticipated in the future. Modern methods of quality control are needed; control charts represent the most economical and effective way to return operating information to the operators in a form they can easily understand. Every inspection test thus becomes the basis for possible action. Control charts are used to help the operators, not to police them. The individual mill must find out its normal variations to protect itself against improper specifications; it can then supply the controlled quality its customers require within limits of variation that it can meet. Examples of control charts and their application are given. 9 figures. E.S.

STEAM ACCUMULATORS

WARTENBERG, F. Steam accumulation in paper mills; aid to production economy. World's Paper Trade Rev. 38, no. 10: 737-40 (Sept. 4, 1952).

The advantages of the B.B.A. steam accumulator to the paper industry are outlined; spare boilers or obsolete shells can be adapted for the purpose. 4 illustrations. E.S.

STEAM POWER

ANON. New packaged boiler at South West Box. Fibre Containers 37, no. 9: 44, 46, 51 (September, 1952).

The gas-fired Vapor-Clarkson steam generator, Model 4740, for the South West plant in Sand Springs is described. Its primary purpose is to provide steam for the new Langston corrugator. 11 figures. E.S.

SCHAPHORST, W. F. Some suggestions for modernizing a power plant. Pulp Paper Mag. Can. 53, no. 10: 161 (September, 1952).

The possibilities for modernizing an old steam plant at a considerably lower cost than the construction of a new plant are enumerated. E.S.

THOMSON, A. G. The effects of smoke reduction on boiler efficiency. Paper-Maker (London) 124, no. 2: 114-15 (August, 1952).

A brief account is given of investigations of the Fuel Research Station of the Department of Scientific and Industrial Research in Great Britain, which have established conclusively that a close relationship exists between smoke density and inefficient combustion. Smoke-eliminating firing doors were developed which will admit sufficient secondary air into the furnace throughout the firing cycle. The thermal efficiency of the boiler was thereby raised from 66 to 72%. Attempts to improve the mixing of the combustible gases with the air required for their combustion (thereby reducing the amount of necessary excess air) resulted in a slight reduction in thermal efficiency. 1 illustration. E.S.

STEEL STRAPPING

ANZENHOFER, RUDOLF. Insufficiently strapped paper packages cause troubles during shipment by rail. Allgem. Papier-Rundschau no. 14: 642-4; supplement: no. 18: 820 (July 26, Sept. 26, 1952). [In German]

Examples of correct and incorrect steel strapping of paper shipments are given, with particular reference to the possibility of hand injuries by faulty strapping. 9 illustrations. E.S.

STRAW

TABB, C. B. The place of agricultural residues in paper making today. Chemistry & Industry no. 40: 960-4; discussion: 964 (Oct. 4, 1952); *cf.* B.I.P.C. 23: 50.

The author reviews the present status of agricultural residues—notably cereal straws (I) and bagasse (II)—as papermaking raw materials, including pulping processes, papermaking characteristics, bleaching, the use for boards and wrappers, stream pollution and chemical recovery, and the manufacture of dissolving pulps. (I) and (II) may be converted to pulps which can be used alone for a wide variety of papers, or they may be mixed with wood pulp to impart valuable properties. Several processes are in successful commercial operation for the manufacture of unbleached and bleached pulps; each process has features which makes it more or less suitable for a given set of circumstances, and many factors must be carefully considered before the process for a new mill is selected. Although there is room for development, research in progress at the present time will probably not bring about revolutionary changes in the near future; what is needed is industrial application of the facts which are already known. E.S.

STREAM POLLUTION

GUHA, S. R. D. Paper mill effluents. Indian Pulp and Paper 7, no. 1: 53-5 (July, 1952).

The author reviews briefly the types of effluents discharged by pulp and paper mills and some of the treatments to prevent stream pollution. E.S.

SULFITE WASTER LIQUOR

ANNETT, S. R. P. Utilization of sulphite pulp mill wastes. Can. Chem. Processing 36, no. 11: 84, 86 (October, 1952).

The author discusses established uses of Lignosol (*cf.* B.I.P.C. 22: 947) and the search for new applications by the company which produces it. E.S.

ANON. Sewer feed and sales dollars. Can. Chem. Processing 36, no. 11: 14, 16-17 (October, 1952).

The Canadian sulfite pulp production in 1951 amounted to 2,533,000 tons with about equal quantities of waste. A brief review of the utilization of the spent sulfite liquor by several Canadian mills is given, including fodder yeast, ethyl alcohol, vanillin, powdered lignosulfonate, and lignosol products. 1 table. E.S.

MANNBRO, NILS. Spent sulfite liquor as cooking liquor for neutral sulfite cooking. Svensk Papperstidn. 55, no. 17: 665-7 (Sept. 15, 1952). [In Swedish; English and German summaries]

A procedure, termed Silfit process, for the utilization of spent sulfite liquor (I) in neutral semichemical pulping is described; it has certain similarities with the Silfat process (*cf.* B.I.P.C. 21: 498). The chemicals required for the neutral sulfite cook are dissolved or prepared in spent calcium or sodium bisulfite liquor. During the evaporation and combustion of the spent neutral sulfite liquor the combustible matter and the sulfur in the spent (I) can be utilized. The soda smelt is dissolved in (I) and, on treatment with gases which contain carbon dioxide, hydrogen sulfide is recovered which can be oxidized to sulfur dioxide (II). (II) can be used for producing sulfite in the carbon dioxide-treated liquor or sent to the sulfite mill. In laboratory cooks, semichemical pulps with good strength properties and in a yield of about 70% were

obtained. Patent applications for the new method have been made. 2 tables, 2 figures, and 4 references. E.S.

SULFUR

CHEMICAL ENGINEERING. Sulphur from H_2S. Chem. Eng. 59, no. 10: 210-13 (October, 1952).

A pictured flowsheet of the processes used in the sulfur-recovery plant of Freeport Sulphur Co. near Westville, N.J. is presented, where 30 long tons of elemental sulfur are recovered daily from the waste hydrogen sulfide gases of the nearby Eagle Point refinery of the Texas Co. 5 illustrations and 1 flowsheet. E.S.

FREEPORT SULFUR CO. Construction continues apace on new sulfur plant. Chem. Eng. News 30, no. 43: 4486-7 (Oct. 27, 1952).

It is anticipated that the Frasch-process sulfur-mining plant at Garden Island Bay will be in operation at the end of next year. The 15-million dollar project promises an annual yield of 500,000 long tons of sulfur. The rising power plant, the proposed arrangement for a supply of fresh water, and the plans for sulfur shipment are described. 6 illustrations. L.C.

TANNINS

NORTHEASTERN WOOD UTILIZATION COUNCIL. Tannin from waste bark. Northeastern Wood Utilization Council, Bull. no. 39: 5-31 (September, 1952).

The bulletin consists of the following papers, listed by authors and titles: Hillis, W. E. The tanning material situation, p. 5-8; Bell, Kenneth E. The tanning industry in New England, p. 9-12; Flinn, Edwin S. Operation of a tannin extraction plant, p. 13-16; Rogers, Jerome S. Potential tannin supplies from domestic barks—11 references, p. 17-28; and Methods of bark separation, including Jarman, G. W. Air flotation method, p. 29-30; and brief notes on Thermo-pressure method, cyclone method, and portable debarkers, p. 30-1. E.S.

TRAFFIC DEPARTMENTS, INDUSTRIAL

ANON. Traffic management. Tappi 35, no. 10: 90A, 92A (October, 1952).

The possibilities for obtaining traffic advice and administration by those mills whose production is not large enough to warrant the employment of a full-time traffic manager are outlined briefly; they include the Traffic Committee of the American Paper and Pulp Association, traffic associations, the traffic bureau of the local Chamber of Commerce, shippers' advisory boards, and the engagement of a traffic consultant who serves several diversified industries. Some executive within the mill should understand the concepts of traffic administration, if it is not feasible for the mill to maintain its own traffic department. E.S.

VACUUM PACKAGING

E. S. & A. ROBINSON LTD. The Vac Pac. Paper Box Bag Maker: 92-3 (September, 1952).

A flexible vacuum pack for the packaging of cheese, dried milk, yeast, coffee, nuts, and similar commodities made of such materials as polyethylene, rubber hydrochloride, cellulose acetate, vinyls, and combinations thereof, and the machine for applying the vacuum are described. 4 illustrations. E.S.

VANILLIN

ANON. New vanillin process. Can. Chem. Processing 36, no. 11: 58, 60 (October, 1952).

The new process for making vanillin from spent sulfite liquor at the Thorold, Ont. mill of the Ontario Paper Co. is described; the process is based on the use of lime in place of the more expensive caustic soda and was developed by Fisher, Marshall, and Sankey (*cf.* U. S. patents 2,576,752-4 [Nov. 27, 1951] B.I.P.C. 22:386). 1 diagram. E.S.

VOCABULARY, TECHNICAL

KOTTE [HANS] What is actually a cardboard box? Suggestions for adoption of a uniform terminology in the industry. Allgem. Papier-Rundschau no. 12: 558-9 (June 26, 1952). [In German]

The need for accurate definitions in the paper- and board-converting industry is emphasized. A few tentative definitions are included. 1 table and 3 figures. E.S.

WAGES

ZEYEN, ANDREAS. Higher output without decrease in quality. Allgem. Papier-Rundschau no. 11: 512-14 (June 12, 1952). [In German]

Examples are given to show how piece work in the paper-converting industry can be successfully combined with a "positive" premium for waste. If, for instance, the permissible waste has been standardized at 3%, the worker receives a reward if he can keep it below this figure (positive premium), whereas it is deducted from his pay when it exceeds the permissible amount (negative premium). 2 tables and 2 figures. E.S.

WASTE

ANON. Rejects and waste in paper manufacture. Allgem. Papier-Rundschau no. 16: 718-20 (Aug. 26, 1952). [In German]

The peculiarity of the different processes which constitute the manufacture of paper from the raw material over the paper machine to a condition in which it is ready for shipment involves a number of places where losses occur. Some of these are unavoidable (as in slitting and rewinding of rolls or cutting to standard sizes) and are called waste; others depend partially upon the human element and may be influenced. These are called rejects. The first prerequisite for an improvement of conditions is the exact knowledge of the amount of losses and the locations where they occur. Instruments for determining shrinkage and a method of evaluating and calculating the results are described by an example. 2 tables and 1 figure. E.S.

WASTE LIQUOR

RUDOLFS, WILLEM, and HEUKELEKIAN, H. Biological treatment of industrial wastes. Chem. Eng. Progress 48, no. 9: 449-54; discussion: 454 (September, 1952).

In a review of the theory and published information regarding actual installations and pilot-plant experiences with biological processes for the treatment of industrial wastes, a section (p. 452) on pulp and paper waste is included. 3 figures and 45 references. E.S.

WASTE PAPER

SMITH, S. F. Waste paper and future fibre supplies. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 2: 351-5 (May, 1952).

Statistical data on the supply and consumption of waste paper in the United Kingdom for the period 1939-51 are given. 5 tables. E.S.

WATER AND WATER TREATMENT

LAL, AMRIT. Quality of water for pulp and paper manufacture. Indian Pulp and Paper 7, no. 1: 105, 107, 109-10 (July, 1952).

The author discusses the requirements for process water in the pulp and paper industry and different methods of purification, which will depend upon the nature of the raw water and the type of paper being manufactured. 7 references. E.S.

WATER-MARKS

G. Z. N. Differentiation between genuine and impressed watermarks. Allgem. Papier-Rundschau no. 17: 772 (Sept. 12, 1952). [In German]

Although experience is required for differentiating genuine (I) from impressed (II) watermarks, the following will serve as an aid to the beginner. The lines of (II) always appear more exact, distinct, and uniform than those of (I), which are never as precise and accurate throughout the entire design. Particularly under the microscope, the lines of (I) will always exhibit some blurred spots. Shade-craft watermarks produced by a depressed pattern in the dandy roll give darker lines; such watermarks are always genuine because they cannot be made by any other process. E.S.

WEIGHING MACHINERY

ANON. A measuring stick for paper rolls. Allgem. Papier-Rundschau no. 18: 812-13 (Sept. 26, 1952). [In German]

A measuring stick is described for the rapid determination of the weight of a paper roll of any circumference by measuring its radius and reading off the corresponding weight. Its use is outlined. 1 table and 1 figure. E.S.

WHITE WATER

BIENKIEWICZ, B., MARDON, J., and ROBINSON, W. F. E. Studies on backwater systems. Part I. Theoretical principles of backwater systems, operation and methods for material balance construction. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 2: 383-94 (May, 1952).

In most mills, the white water is partly or entirely re-used in preparing the stock. This effects a saving in the consumption of fiber and other materials, but the consequent high concentrations in the system create new papermaking problems. Two methods are described for calculating the concentrations at any time, if the rates of addition and wastage are known; a third method makes possible a complete materials balance and the calculation of the equilibrium concentration when only the relative rates of addition of two or more materials are given. 5 figures. E.S.

BIENKIEWICZ, B., MARDON, J., ROBINSON, W. F. E., and SCRUTON, H. Studies on backwater systems. Part II. Examples of closed

systems in operation. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 2: 395-407 (May, 1952).

Flow diagrams of two nearly closed systems are presented; the first is for a machine making medium-weight, fairly wet-beaten papers in short discontinuous runs, whereas the second machine makes tissue in long runs with a system of a rather large capacity. In comparison, system (I) is characterized by a low fiber through-fraction, low white-water consistency, and a shorter period of buildup; the opposite applies to system (II). In both systems loading, when used, has a higher through-fraction, and large quantities of it are continuously in circulation; the fine fibers in the backwater resemble loading, especially in (II). The complete closure of the systems represents a real saving in the consumption of water and raw materials, but creates new papermaking problems, which are discussed in Part III of this series. Examples of the use of the equations developed in Part I are given in the appendixes. 10 figures. E.S.

MARDON, J., ROBINSON, W. F. E., and WILKINSON, D. M. Studies on backwater systems. Part III. Operation of closed systems—papermaking considerations. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 2: 408-18; discussion: 419-20 (May, 1952).

The advantages and disadvantages resulting from the closing of a white-water system are discussed. The disadvantages include: a changing quality in paper during the buildup of fines and other materials and the effect of the fines on the amount of beating required; the trouble which may result from the buildup of dispersed pitch in the system which may be controlled by the addition of sodium hexametaphosphate (Calgon), naphthaleneformaldehyde-sulfonic acid, sodium aluminate, or diatomaceous earth; the high adsorption of alumina which tends to lower the pH with consequent sensitivity to changes in fresh-water input; the increasing risk of froth formation resulting from a buildup of chemicals; and the need for slime control. The conclusion is reached that the operation of a closed system results in a definite saving of materials; however, increasing trouble resulting from pitch and foam formation and other causes may make it preferable to open the system to a certain extent. 8 tables. E.S.

RUDOLFS, WILLEM, and AMBERG, HERMAN R. White water treatment. II. Effect of sulfides on digestion. Sewage Ind. Wastes 24, no. 10: 1278-87 (October, 1952); *cf.* B.I.P.C. 23: 133.

In the anaerobic stabilization of soluble organic wastes high in sulfate, considerable quantities of hydrogen sulfide are produced which may effect a toxic or retarding effect on gas formation. Laboratory studies to determine the effect of various concentrations of soluble sulfide upon the anaerobic digestion process showed that additions of sodium sulfide up to 300 p.p.m. (as $S^=$) had no effect upon the production of volatile acids when a complex substrate (such as white-water concentrate) is used. A soluble sulfide concentration as low as 82 p.p.m. $S^=$ retarded the methane fermentation of sodium acetate, and soluble sulfide concentrations in excess of 150 p.p.m. $S^=$ practically inhibited methane fermentation. 2 tables, 10 figures, and 8 references. E.S.

WOOD—EXTRACTIVES

MACK, C. H., and BICKFORD, W. G. The conidendrols as inhibitors of oxidation and polymerization. J. Am. Oil Chemists' Soc. 29, no. 10: 428-30 (October, 1952).

Alpha- and beta-conidendrol have been tested and compared with accepted stabilizers in the following applications: as antioxidants for the prevention of rancidification in fats, oils, and candies containing fats; as stabilizers against aging and resinification in GR-S-type polymers; and as additives for inhibiting the polymerization of vinyl-type monomers. Accepted acceleration tests were employed in determining the relative efficiencies of the various stabilizers. Such tests do not necessarily yield quantitative information concerning the stabilization performance under conditions of use. However, experience has shown that any marked differences observed in these tests indicate proportional differences in normal use. On the basis of the data reported, it may be concluded that the conidendrols are approximately equal or superior to other stabilizers in current use in their respective fields. In addition, the conidendrols are produced from spent sulfite liquor, a raw material which is in abundant supply, and offer the possibility of supplementing or replacing stabilizers derived from benzene or naphthalene. 4 tables and 11 references. E.S.

WOOD—PULP YIELD AND QUALITY

MURTO, JAAKKO O. Finnish wood as a raw material for pulp and paper. Paper and Timber (Finland) 34, no. 6: 237-40; no. 7: 267-74; no. 8: 301-6; no. 9: 343-51 (June-September, 1952). [In Finnish; English summary]

This is a report of detailed studies at the Central Laboratory in Helsingfors, Finland, on the quality of Finnish pulpwood which was begun in 1940 and continued during 1946-50. An extensive literature survey was also made but the results are not included in the present article. The three most common Finnish pulpwood species—spruce, pine, and birch—were studied with regard to their suitability for sulfite and sulfate pulping. About 600 experimental cooks were made; the digester charge was usually 2.5 kg. of chips. Almost 100 tree trunks were taken from the forests and investigated. Certain anatomical measurements were carried out at nine different pulp mills from a total of 6500 logs. Forest type and crown class were shown to be minor factors in comparison with the geographical location of the forest and the location of the wood in the tree, especially in pine. The differences between the extreme southern and northern species of Finland received particular attention. North Finnish pine contains a large amount of resin which results in a higher alkali requirement in the sulfate process. The suitability of Finnish birch for sulfate cooking was also studied to a certain extent; the need for adaptations in the papermaking process received special attention. The need for co-operation between foresters and pulp and paper mill engineers is emphasized. 8 tables and 17 figures. E.S.

WOOD—STRUCTURE

HOLDHEIDE, WILLIAM, and HUBER, BRUNO. Similarities and differences in the detailed structure of wood and bark. Holz Roh- u. Werkstoff 10, no. 7: 263-8 (July, 1952). [In German]

Bark and wood exhibit considerable homology in structure and arrangement of individual cells. Only the processes of dilatation and bark formation correlated with the position of the bark outside of the cambium possess no counterpart in the wood. 12 figures and 13 references. I.H.I.

WOOD OPERATIONS

MARTIN, ALBERT. Logging in Newfoundland in 1952. Pulp & Paper 26, no. 11: 88-90 (October, 1952); *cf.* B.I.P.C. 19: 593.

Bowater's logging operations in Newfoundland are described under the four headings: cutting late summer and fall; hauling during winter; driving in spring; and mill delivery and export, May to December. 9 illustrations. E.S.

NORDSTRÖM, T. Logging in the tropics. Paper and Timber (Finland) 34, no. 9: 352-6 (September, 1952). [In Swedish; English summary]

A report of the different phases of logging in the Belgian Congo is given. 2 tables and 3 figures. E.S.

QUINTANA L., RAFAEL. A unique Mexican company. Pulp and Paper 26, no. 11: 94, 96 (October, 1952); *cf.* B.I.P.C. 22: 424.

The logging operations by the special company formed to supply the pulpwood needs of the Mexican kraft pulp, paper, and board mill of Compania Industrial de Atentique are described. 8 illustrations. E.S.

WOOD TRANSPORTATION

MCNALLY, J. A. [moderator] Mechanical hauling. Pulp Paper Mag. Can. 53, no. 10: 191-4, 196, 198-200, 202-3, 205-6, 208, 210, 212 (September, 1952).

The article is a two-part panel discussion (held at the March, 1952 meeting of the Woodlands Section of CPPA) on the use of mechanical equipment for hauling and the direction toward which developments in this field tend. Part I deals with hauling from the stump to the intermediate landing and with the relative merits of the horse and mechanical equipment. Part II is concerned with hauling from the intermediate to the final landing. L.C.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents will be abstracted from the complete specifications.

ADHESIVES

CONE, CHARLES N. Methyl cellulose-modified phenolic adhesive and plywood product. U. S. patent 2,613,167. Filed March 28, 1949. Issued Oct. 7, 1952. 31 claims. Assigned to United States Plywood Corporation. [Cl. 154-45.9]

An adhesive for the manufacture of plywood by the hot-press method consists of a phenol-formaldehyde resin and a methylcellulose together with a solid filler (e.g., walnut shell flour). Various other cellulose ethers can be used. Various formulations are given. 2 figures. C.J.W.

ALKALINE PROCESSES

TARKKONEN, OMA. Digester filling in sulfate pulping. U. S. patent 2,614,923. Filed Feb. 1, 1947. Issued Oct. 21, 1952. 2 claims. Assigned one-half to Sunila Osakeyhtiö. [Cl. 92-7]

A sulfate digester is charged with chips and with black liquor under pressure. The black liquor has substantially the same temperature and pressure as when it was removed from the digester of the previous cook. The quantity of black liquor is such that the entire charge of chips will be impregnated. After the packing operation the requisite quantity of white liquor is added for the proper digestion of the chips. 2 figures. C.J.W.

BOARD

FEIGLEY, DAVID A., JR. Preparation of sheet materials containing fibers, cork particles, and a rubberlike binder. U. S. patent 2,613,190. Filed Jan. 26, 1951. Issued Oct. 7, 1952. 7 claims. Assigned to Armstrong Cork Company. [Cl. 260-17.4; changed to 92-21]

A mixture of 35.25 pounds of hardwood sulfite pulp and 31.2 pounds of finely divided cork (most of which will pass a 200-mesh screen) in 900 gallons of water is treated with 15 pounds of alum and the pH is adjusted to about 8 with 28% ammonium hydroxide (about 4500 cc.); to this mixture

is added a mixture of 75 pounds of a butadiene-acrylonitrile copolymer (40% solids) and 1360 cc. of a 10% solution of Tamol N; after the solids content of the latex is coagulated upon the fiber and cork particles, the product is formed into a sheet which can be used as an undercovering for rugs, as a low-cost gasket material, as antisqueak material for automobiles, and the like. The outstanding use seems to be as a gasket material. C.J.W.

BOARD, ASBESTOS

BADOLLET, MARION S., and STREIB, WILLIAM C. Partially dehydrated chrysotile fiber and method of making. U. S. patent 2,616,801. Filed Sept. 20, 1947. Issued Nov. 4, 1952. 7 claims. Assigned to Johns-Manville Corporation. [Cl. 92-3]

One difficulty in the manufacture of water-laid asbestos fiber sheets is the comparative slowness with which water separates from the sheet by filtration as the sheet is being formed. The filtering quality of chrysotile asbestos fibers is enhanced by heating them in a stream of hot dry gases at a temperature of 900 to 1500°F. for a period of 5 to 30 seconds and rapidly cooling the fibers. 1 figure. C.J.W.

BOARD SPECIALTIES

LEACH, SAM L. Container carrier. Canadian patent 486,820. Filed Nov. 21, 1949. Issued Sept. 30, 1952. 2 claims.

A carrier for bottles or cans has a bottom from which extends a tongue of double thickness forming a portion of the longitudinally extending portion of the carton and having interlocking engagement with end portions of the center partition and also with the transversely extending partitions, thus preventing the collapse of the carton when filled with bottles. Means are also provided for engaging a wire handle. 24 figures. C.J.W.

PARKER, GEORGE H. Can carrier with foldable handle. U. S. patent 2,614,737. Filed Aug. 24, 1950. Issued Oct. 21, 1952. 3 claims. Assigned to Container Corporation of America. [Cl. 224-45]

A can carrier has an integral, centrally disposed partition which is so constructed that the handle portion can be folded against the top of the carrier without impairing the subsequent efficiency of the carrier. 5 figures. C.J.W.

CASEIN

WHITE, THOMAS A. Viscosity-stable casein adhesives. U. S. patent 2,613,155. Filed May 26, 1949. Issued Oct. 7, 1952. 6 claims. Assigned to National Starch Products Inc. [Cl. 106-138]

A stable type of casein adhesive contains, in addition to the usual ingredients, not more than 10% by weight of an alkaline earth base or salt. Examples of such compounds are barium hydroxide, strontium chloride, or calcium nitrate. The addition of these bases or salts increases the viscosity of the adhesive paste and also retains the stability and long working life of the product. C.J.W.

CELLULOSE ETHERS

HUTCHINSON, WILLIAM M. Drilling fluid. U. S. patent 2,614,979. Filed Aug. 18, 1947. Issued Oct. 21, 1952. 17 claims. Assigned to Phillips Petroleum Company. [Cl. 252-8.5]

A drilling mud contains the reaction product of a nitrogen-containing organic base with oxycellulose, carboxymethylcellulose, carboxyethylcellulose, carboxypropylcellulose, cellulose acid sulfate, or cellulose acid sulfonate. Specific examples are the triethanolamine, ethylenediamine, and morpholine salts of carboxymethylcellulose. These compounds may be used to the extent of one to four pounds per barrel of mud, although the actual quantity used is defined by the results desired rather than by actual numerical amounts.
C.J.W.

CORNSTALKS

CHIEGO, BERNARD. Composition for fabricating paper and a process of making it. U. S. patent 2,614,924. Filed March 8, 1949. Issued Oct. 21, 1952. 6 claims. Assigned 10% to Frank Gardner and 80% to Albion D. T. Libby. [Cl. 92-14]

Corncobs or bagasse, with a particle size of 5 to 80 mesh, is digested for 30 minutes at 212°F., using 9 or 10 tons of solution for each ton of raw material; after washing free of black liquor, the product is bleached with sodium hypochlorite containing 5.5% chlorine. The resulting product is dried and pulverized; it is termed Cellan and may be mixed with wood pulp in the manufacture of paper. The black liquor from this method can be concentrated (22% solids) and fermented. In a second method the raw material is digested with 10 parts of water at 15 pounds pressure and the residue is further treated with 1% sodium hydroxide as in the first method. By the second method the chlorine consumption in bleaching is reduced 50%. C.J.W.

DECULATOR PROCESS

CLARK, CARLETON L., and VICARIO, CARLO. Deaerating a suspension of papermaking stock. U. S. patent 2,614,656. Filed Aug. 15, 1949. Issued Oct. 21, 1952. 3 claims. Assigned to The Rotareaed Corporation. [Cl. 183-114]

The invention consists of a vacuum tank in the form of a horizontal drum provided with a double row of stock-injecting atomizing nozzles fed from a header extending longitudinally of the tank. The nozzles discharge into the tank in a downwardly inclined direction and preferably against impingement faces spaced a suitable distance both from the nozzles and from the level of the de-aerated stock in the tank. The desired vacuum is maintained by a vacuum pump operating jointly with or boosted by a steam jet. The method of determining the required vacuum is described. The higher the temperature of the stock, the less the vacuum required. It is claimed that all the air is removed except the 0.1% by volume that is accepted as being unextractable. 7 figures. C.J.W.

DEWAXING

HOPE, HENRY B. Methods of dewaxing paper. U. S. patent 2,614,922. Filed Nov. 13, 1947. Issued Oct. 21, 1952. 5 claims. Assigned to R. H. Comey Company, Inc. [Cl. 92-1.6]

A three-step process is proposed for recovering the wax and pulp from waxed paper; it is illustrated by the following example. Lily cups (480 kg.) are added to a bath consisting of 3500 liters of water, 70 kg of Nacconol NR, and 176 liters of 9% sulfuric acid, which is heated five hours at about 95°C. The wax is skimmed off, the pulp drained for 15 minutes and then introduced into a second bath containing 3.5 kg. of sodium chlorite in 3500 liters of water at 70°. After ten minutes the material is removed, drained, and then treated with a solution of 35 kg. Nacconol NR and 105 liters of 9% sulfuric acid in 3500 liters of water for one hour at about 95°. After rinsing with 3500 liters of water, the material may be treated with water

containing sodium bisulfite at 70°. Substantially complete removal of the wax is claimed. C.J.W.

FOLDING BOXES

BUTTERY, KENNETH T. Collapsible cellular carton. U. S. patent 2,613,024. Filed Jan. 22, 1947. Issued Oct. 7, 1952. 2 claims. Assigned to Sutherland Paper Company. [Cl. 229-28]

This patent is a continuation of U. S. patent 2,562,233 (July 31, 1951) (*cf.* B.I.P.C. 22: 67). It covers the construction of an egg carton in which the cover is easily engaged in closing the carton, is very securely retained and, at the same time, may be easily disengaged by manual manipulation. 6 figures. C.J.W.

FRANKENSTEIN, WILLIAM P. Carton. U. S. patent 2,614,746. Filed Oct. 9, 1947. Issued Oct. 21, 1952. 5 claims. [Cl. 229-33]

The patent covers a box or carton of the knock-down type having attached a cover or lid and in which the walls of the carton consist of the type of spaced-apart inner and outer wall members and in which the cover may be a separate member or formed from portions integral with the carton walls. The cover may be divided so that a portion of the complete cover or lid is carried by each of two side walls to provide a complete cover for the package. The cover may have a compartment for carrying a perfume. 15 figures. C.J.W.

RINGLER, WILLIAM A. Package for frozen foods and the like. U. S. patent 2,613,025. Filed Jan. 2, 1947. Issued Oct. 7, 1952. 2 claims. Assigned to The Gardner Board and Carton Co. [Cl. 229-31]

A method is described for the preparation of a container for frozen foods from a boxboard blank combined with one or more sheets of a protective filmlike substance, such as paper, glassine or, preferably, moistureproof cellophane. 13 figures. C.J.W.

WAGGONER, FRANK H. Container closure. U. S. patent 2,612,307. Filed Dec. 16, 1949. Issued Sept. 30, 1952. 3 claims. [Cl. 229-44]

A top closure for a container (e.g., cereals) consists of two flexible overlapping flaps, one of which is wider than the other; the flaps are so constructed as to permit repeated opening and closing of the top. 4 figures. C.J.W.

INSULATION AND INSULATING MATERIALS

MARSH, FRANK L., KOEHLER, CARL J., and CHRISLER, WILLARD L. Method of making rigid type felted mineral wool product. U. S. patent 2,615,806. Filed April 12, 1947. Issued Oct. 28, 1952. 4 claims. Assigned to National Gypsum Company. [Cl. 92-21]

A rigid-type insulation product is formed from a mixture of 70 parts mineral wool, 15 parts paper pulp, 15 parts comminuted asphalt, 0.15 part wetting agent, and 1500 parts of water; after thorough mixing, the product is formed into a block and dried at about 300°F. C.J.W.

INTERIOR PACKING

ROSS, CYRIL R. Container partition structure. U. S. patent 2,614,715. Filed April 1, 1949. Issued Oct. 21, 1952. 5 claims. Assigned to Ross Bros. (Ben Rhydding) Limited. [Cl. 220-22]

The invention covers a partition structure for insertion into a receptacle to divide it into a plurality of compartments; the structure consists of at least one main division member and at least two secondary division members. Each main division member consists of at least three aligned flat division sections integrally joined to each other through alternate flat U-shaped clips which extend laterally from the plane of the division sections. 13 figures. C.J.W.

MACHINERY—BALERS

SODERLIND, CARL J. Presses, for instance, packing presses or the like. Canadian patent 486,956. Filed Nov. 3, 1947. Issued Sept. 30, 1952. 10 claims. Assigned to Svenska Cellulosa Aktiebolaget.

Automatic means are provided for the unloading of presses adapted for compressing, packing and/or baling material in the shape of boards or other sheet material or material in the form of a mass, such as paper pulp. 2 figures. C.J.W.

MACHINERY—CONVERTING MACHINERY

BAISCH, STEPHEN J., and LEE, HERMAN C. Paper reinforcing machine. U. S. patent 2,614,054. Filed Nov. 8, 1949. Issued Oct. 14, 1952. 13 claims. Assigned to Thilmany Pulp and Paper Company. [Cl. 154-1.76]

A machine is described which will lay upon a moving sheet of paper a substantially uniform thread pattern which may extend across the full width of the sheet; it provides means for laying threads upon a sheet of paper coated with an adhesive at widely varying oblique angles without changing parts of the machine. Following the application of the threads, a second sheet of paper is applied and the assembly is passed through compression rolls. 5 figures. C.J.W.

HEYWOOD, VINCENT E. Closure flap folding and envelope stacking mechanism for envelope machines. U. S. patent 2,612,088. Filed July 13, 1948. Issued Sept. 30, 1952. 4 claims. Assigned to United States Envelope Company. [Cl. 93-62]

A simplified closure flat-folding means is provided for envelope-making machines. 16 figures. C.J.W.

HOUTMAN, HAROLD R. Cellular carton erecting machine. U. S. patent 2,612,086. Filed Dec. 4, 1950. Issued Sept. 30, 1952. 15 claims. Assigned to Sutherland Paper Company. [Cl. 93-37]

The machine is adapted for the erection of the partitions of egg cartons in which a part of the transverse partitions must be swung in one direction and a part in the opposite direction to erect them. The complete erection of the transverse partitions is accomplished by a single operating stroke. 7 figures. C.J.W.

PALMER, CHARLES E. Container forming apparatus. U. S. patent 2,614,466. Filed Oct. 9, 1948. Issued Oct. 21, 1952. 6 claims. Assigned to Package Machinery Company. [Cl. 93-51]

An apparatus is provided for folding a preformed blank into a container and for effecting the engagement of locking elements which will lock the container in a setup condition. 9 figures. C.J.W.

WILLBRANDT, FRANKLIN M. Machine for erecting cartons. U. S. patent 2,612,087. Filed Oct. 7, 1949. Issued Sept. 30, 1952. 13 claims. Assigned to Sutherland Paper Company. [Cl. 93-49]

A machine is claimed for erecting cartons comprising side walls hingedly connected to a bottom, one opposed pair of the walls having slits therein providing deflectable portions above the slit and the other pair having corner flaps provided with tongues engageable with such deflectable portions. The carton blank is supported during the wall erecting and interlocking steps. 11 figures. C.J.W.

WOELFER, ROBERT O. Carton erecting machine. U. S. patent 2,612,823. Filed Aug. 14, 1948. Issued Oct. 7, 1952. 3 claims. Assigned to Container Equipment Corporation. [Cl. 93-53]

This is an improvement on U. S. patent 2,390,107 (Dec. 4, 1945) to Kucklinsky. It provides means for automatically feeding initially flat collapsed cartons from a stack, means for expanding or squaring the carton bodies and thus setting up the same in an open condition, and means for closing and sealing one end, and after filling the other end. 8 figures. C.J.W.

MACHINERY—CUTTERS

BATTERSBY, JAMES E. Apparatus for cutting sheets from webs of cardboard, paper, and the like. U. S. patent 2,613,741. Filed March 29, 1950. Issued Oct. 14, 1952. Assigned to Masson Scott & Company Limited. [Cl. 164-68]

The invention is primarily concerned with the mounting of the feed rolls which supply webs to a plurality of cutters. 3 figures. C.J.W.

MACHINERY—FELTS

HALL, EDWARD H. Paper mill felt. U. S. patent 2,612,190. Filed Jan. 27, 1949. Issued Sept. 30, 1952. 10 claims. [Cl. 139-426]

Pure nylon threads are used as the warp at the extreme edges of the felt; the warp threads in the margins may be wholly nylon or a mixture of nylon and cotton. This gives a felt with more durable edges and margin; the edges are more resistant to abrasion and they are substantially unaffected by exposure to lubricating oils. They are also highly resistant to repeated bending. 10 figures. C.J.W.

MACHINERY—PACKAGING MACHINERY

ANDERSON, SWAN F. Folding and filling machine. U. S. patent 2,612,016. Filed Aug. 16, 1946. Issued Sept. 30, 1952. 13 claims. Assigned one-half to Ralph F. Anderson. [Cl. 53-56]

An apparatus is described which automatically sets up a knocked-down carton, fills it with ice cream or other material, and then closes it. 27 figures. C.J.W.

MERRY, RICHARD C. Apparatus for assembling partitions for packing cells. U. S. patent 2,612,085. Filed Sept. 22, 1948. Issued Sept. 30, 1952. 7 claims. [Cl. 93-37]

A machine is described which is capable of assembling the partitions and cross-partitions to form packing cells for bottled beverages, eggs, and other articles. It consists of a plurality of units, each of which includes a magazine

for feeding the partitions; these magazines are adjustable to accommodate various sizes and thicknesses of partitions. The operation of the machine is described. 22 figures. C.J.W.

MACHINERY—PASTING MACHINE

PETERSON, WILLIAM R., and HARTMAN, CARL H. Apparatus for sealing valved bags. U. S. patent 2,613,022. Filed March 20, 1947. Issued Oct. 7, 1952. 19 claims. Assigned to St. Regis Paper Company. [Cl. 226-48]

After pointing out the disadvantages of bags with valves which are not provided with a positive seal, an apparatus is described for sealing such valves by means of heat and pressure (in one form of the invention pressure alone is used). The unit consists of means for spreading the wall surfaces of the valve sleeve, the pressing together of the inner surfaces by means of the clamp, and of the application of heat and pressure to seal the valve which carries a heat- or pressure-sensitive adhesive. 21 figures. C.J.W.

MACHINERY—PULPERS

KNOLL, WILLIAM V. Apparatus for pulping papermaking material. U. S. patent 2,616,340. Filed Feb. 1, 1949. Issued Nov. 4, 1952. 3 claims. [Cl. 92-26]

An apparatus for disintegrating pulp in sheet or lap form or waste materials consists of a round or square vessel or tank with an inverted frustoconical bottom in the case of the round vessel or an inverted pyramidal bottom in the case of the square tank. Circulation is effected by two or more impeller units mounted on the angular or sloping portion of the vessel; these are driven at comparatively high speed by individual motors. 5 figures. C.J.W.

MACHINERY—SLICE

MALKIN, BERNARD A. Slice assembly for papermaking machines. U. S. patent 2,615,374. Filed Oct. 4, 1948. Issued Oct. 28, 1952. 19 claims. Assigned to Dominion Engineering Works Limited. [Cl. 92-44]

A method of mounting a slice plate is proposed by means of which it has a wide range of adjustment both with respect to its elevation and its position along the length of the Fourdrinier wire or other sheet-forming element. 8 figures. C.J.W.

MERCERIZATION PROCESS

SCHLOSSER, PAUL H., and MITCHELL, REID L. Steeping of cellulose. U. S. patent 2,614,102. Filed Feb. 23, 1950. Issued Oct. 14, 1952. 1 claim. Assigned to Rayonier Incorporated. [Cl. 260-233]

A dry sheet of cellulose pulp of indefinite length is continuously passed through an operation in which the steeping liquor is applied to one side of the sheet and a reduced pressure is applied to the other side to impregnate the sheet with the liquor; the impregnated sheet is subjected to mechanical pressure and simultaneously to a reduced pressure to remove the excess liquor; the resulting pulp contains a uniformly distributed quantity of sodium hydroxide. The entire operation requires less than one minute. The resulting viscose from such materials is said to have improved filtering rates. 9 figures. C.J.W.

MOLDED PULP ARTICLES

CHAPLIN, MERLE P. Methods of producing molded fibre articles.

Canadian patent 486,693. Filed May 3, 1950. Issued Sept. 23, 1952. 7 claims. Assigned to Chaplin Corporation.

A method is claimed for the manufacture of the hinge section of a molded egg carton; it also covers a cushion section for supporting an egg. 6 figures. C.J.W.

RANDALL, WALTER H. Foldable carton for fragile articles. Canadian patent 486,567. Filed March 8, 1951. Issued Sept. 16, 1952. 10 claims. Assigned to Keyes Fibre Company.

This corresponds to U. S. patent 2,578,739 (Dec. 18, 1951); *cf.* B.I.P.C. 22: 463. It relates to a molded-pulp egg carton. 3 figures. C.J.W.

PACKAGING

SHOUDY, PAUL A. Edible material container. Canadian patent 486,696. Filed Oct. 9, 1951. Issued Sept. 23, 1952. 2 claims. Assigned to Container Corporation of America.

This corresponds to U. S. patent 2,596,087 (May 6, 1952); *cf.* B.I.P.C. 22: 793. It relates to an ice cream container of board lined with an aseptic material. 4 figures. C.J.W.

PAPER—COATED

SNYDER, WILLIAM T. Coating machine for coating flexible sheets. U. S. patent 2,614,522. Filed Sept. 22, 1948. Issued Oct. 21, 1952. 2 claims. [Cl. 118-11]

An apparatus is described for the roll coating of a flat sheet without subjecting the sheet to any substantial bending or flexure which would distort the sheet or tend to curl it. 6 figures. C.J.W.

PAPER SIZING

MCEWEN, ROBERT L. Sizing and bleaching a wet web. U. S. patent 2,613,579. Filed Aug. 27, 1947. Issued Oct. 14, 1952. 3 claims. Assigned to Buffalo Electro-Chemical Company, Inc. [Cl. 92-40]

A method of preparing a sized and bleached sheet of paper consists in applying to the partially dried sheet an aqueous solution of hydrogen peroxide made alkaline with sodium phosphate and a dispersion of wax so that 0.1 to 5% of wax and 0.5 to 10% of hydrogen peroxide are added (on basis of dry weight of paper) and continuing the drying of the paper at an elevated temperature. Penetration of the wax below the surface of the paper occurs without causing the surface to be resistant to ink. C.J.W.

PAPER SPECIALTIES

BORKOSKI, LEON P. Vacuum cleaners and dust bag receptacles. Canadian patent 486,894. Filed Dec. 17, 1946. Issued Sept. 30, 1952. 5 claims. Assigned to Electrolux Corporation.

A paper bag to be used with a vacuum cleaner has a mouth of rubber construction which permits its attachment to the cleaner and its automatic closure on removal from the cleaner. 3 figures. C.J.W.

KATZ, SIDNEY H. Filter material. U. S. patent 2,614,655. Filed Aug. 10, 1943. Issued Oct. 21, 1952. 2 claims. Assigned to the

United States of America as represented by the Secretary of War. [Cl. 183-44]

Means are provided for impregnating a filter paper with finely pulverized asbestos by means of air jets. These jets force the individual asbestos fibers into the filter paper web and blow off the portion not firmly attached to the paper. The asbestos may contain about 1% of pulverized charcoal which acts as an antiagglomerating agent. The filter paper may be made of cotton linters or it may be an asbestos-bearing paper. The product is suitable as a filter for gas masks, is resistant to deterioration by oil smokes, and has a high filtering efficiency for toxic and irritant solid and liquid smoke particles with relatively low air resistance. 1 diagram. C.J.W.

NESTOR, LEONARD R. Coated abrasive article and method of making. U. S. patent 2,609,284. Filed June 28, 1947. Issued Sept. 2, 1952. 7 claims. Assigned to Minnesota Mining & Manufacturing Company. [Cl. 51-302]

In the manufacture of sandpaper or other abrasive sheet material, the abrasive grit is bonded to the supporting backing by a modified starch adhesive. The starch is modified by oxidation with sodium hypochlorite, potassium permanganate, or the like. C.J.W.

PATTERSON, DONALD G. Craze resistant resinous coating, coated product, and process of making it. U. S. patent 2,609,321. Filed May 7, 1948. Issued Sept. 2, 1952. 10 claims. Assigned to American Cyanamid Company. [Cl. 154-121]

A craze-resistant coating for a paper laminate is formed by pebble milling for 6 to 18 hours a mixture of 24 parts of a melamine-formaldehyde resin, 8 parts of glass fiber, 8 parts of titanium dioxide, 26 parts of ethanol, and 24 parts of water. The glass fiber may have a diameter of 4 to 11 microns. A urea-formaldehyde resin may also be used. The composition can also be used as an impregnating material for paper to form a laminate bonded solely with the composition. The laminate can be used in the manufacture of table tops, dishes, trays, refrigerator panels, and the like. C.J.W.

ROWE, WILLIAM W. Creped paper product and process. U. S. patent 2,610,935. Filed Feb. 24, 1949. Issued Sept. 16, 1952. 18 claims. Assigned to Cincinnati Industries, Inc. [Cl. 154-33.05]

In the manufacture of paper webs stretchable in all directions, the web is caused to adhere to the creping surface by means of a thermoplastic adhesive, from which it is removed and contracted by a doctor or knife; the paper is then reversed and caused to adhere to a second creping cylinder by means of the same type of adhesive, from which it is removed by a second knife. The adhesive may be applied to the web by spraying, doctoring, or the like. An applicator roll is preferred. The product is characterized by creping crinkles on one side and their complete visual absence on the other. 8 figures. C.J.W.

SARTORETTO, PAUL A., and CARTER, JOSEPH H., JR. Tobacco sheet material and method of producing the same. U. S. patent 2,613,672. Filed July 11, 1946. Issued Oct. 14, 1952. 9 claims. Assigned to International Cigar Machinery Company. [Cl. 131-15]

A mixture of 95 grams of tobacco waste and 5 grams of sodium carboxymethylcellulose is treated in a colloid mill with 5 to 10% of viscose (prefera-

bly from cotton linters), and formed into a sheet by drying on an imperforate sheet or belt plated with stainless steel or chromium. The reconstituted tobacco sheet or "paper" has a higher wet strength if ammonium carboxymethylcellulose is used in place of the sodium salt. It may be used as a cigar wrapper or as a filler for cigarettes. 8 figures. C.J.W.

SARTORETTO, PAUL A., and CARTER, JOSEPH H., JR. Tobacco sheet material and method of producing the same. U. S. patent 2,613,673. Filed July 11, 1946. Issued Oct. 14, 1952. 21 claims. Assigned to International Cigar Machinery Company. [Cl. 131-15]

A mixture of 95 grams of tobacco waste, and 5 grams of sodium carboxymethylcellulose in 400 cc. of water is passed through a colloid mill, diluted with 1100 cc. of water, and treated with 10% by weight of 85% phosphoric acid (based on the weight of the solids in the dispersion). The resulting slurry is formed into sheets of tobacco "paper" which can be used in cigar or cigarette manufacture. 8 figures. C.J.W.

TOTTEN, ARTHUR I., JR. Label for re-usable bottles. U. S. patent 2,613,168. Filed April 14, 1949. Issued Oct. 7, 1952. 2 claims. Assigned to Reynolds Metals Company. [Cl. 154-46]

A gloss-coated label adapted to be decomposed in the normal washing of bottles consists of a flexible paper base laminated to a metal foil, the foil having a gloss coating thereon comprising a cellulose nitrate and a synthetic resin. 1 figure. C.J.W.

VALENTE, JOHN E. Molded filter product. Canadian patent 486,930. Filed May 26, 1947. Issued Sept. 30, 1952. 9 claims. Assigned to Paper Patents Company.

This corresponds to U. S. patent 2,576,864 (Nov. 27, 1951); *cf.* B.I.P.C. 22: 381. It relates to the manufacture of an oil-filter element. 19 figures. C.J.W.

PHYSICAL TESTING—PAPER—MOISTURE

STRÅTVEIT, NILS N., and SCHIE, ARNE J. Method of measuring the moisture content of a running web. U. S. patent 2,611,974. Filed Sept. 26, 1949. Issued Sept. 30, 1952. 17 claims. [Cl. 34-41]

The decrease in the temperature of the web, caused by evaporation of water from the web, is used as a measure of the moisture content. The temperature is measured at two points; these points should be at a place where the moisture content is not more than 20% (preferably about 10%); the temperature of the web at the first measuring point should be at least 90°C. and should not vary considerably. No substantial amount of heat is supplied to the web between the two points. A variation in the thickness of the web of 25% will not cause a noticeable variation in the temperature decrease measured. Details of the method are outlined. 7 figures. C.J.W.

SEMI-CHEMICAL PULPING PROCESS

KEHOE, RICHARD D., SURINO, ALPHONSE, and GOODWIN, RONALD G. Fiberizing lignocellulose steamed under pressure and apparatus. U. S. patent 2,616,802. Filed July 26, 1949. Issued Nov. 4, 1952. 8 claims. Assigned to Pandia, Inc. [Cl. 92-6]

This patent covers a modification of the Asplund apparatus and of the Beveridge and Kehoe U. S. patent 2,323,194 (June 29, 1943); in this

defibrator the abrasive disks cut the softened wood chips across the grain as well as parallel to the grain. In the present design the chips are not cut across the grain but the impeller functions in such a manner that no definite shear of the material is effected. The chips are introduced into an intermediate horizontal zone where they are subjected to the action of steam and, if desired, chemicals, and then pass to a vertical chamber, at the bottom of which is an impeller with a speed of rotation of about 900 r.p.m. The chips are broken into fragments and then into fiber bundles but without cutting. After this action the product is discharged through orifices to the atmosphere. 8 figures. C.J.W.

SHIPPING CONTAINERS

BARNES, JAMES G. Detachable-label bag. U. S. patent 2,614,349. Filed June 17, 1948. Issued Oct. 21, 1952. 2 claims. Assigned to Bemis Bro. Bag Company. [Cl. 40-2]

A method is described for the production of a labeled bag (especially a multi-ply paper bag) which can be salvaged for re-use by detaching the label without damage to the bag proper but which is not likely to peel during the first use of the bag. 7 figures. C.J.W.

FALLERT, CLIFFORD D., and WHALLEY, GEORGE E. Divisible carton. U. S. patent 2,614,745. Filed Feb. 3, 1947. Issued Oct. 21, 1952. 1 claim. Assigned to Gaylord Container Corporation. [Cl. 229-27]

A completely sealed one-piece rigid carton consists of a pair of divisible smaller connected-together rigid cartons, suitable for shipping cartons for canned or bottled goods. Its construction is described. 7 figures. C.J.W.

FRANKENSTEIN, WILLIAM P. Carton. U. S. patent 2,612,306. Filed July 17, 1946. Issued Sept. 30, 1952. 17 claims. [Cl. 229-31]

A foldable shipping container is so designed that the contents can be displayed and, after use, can be converted into a toy building. 26 figures. C.J.W.

KLASING, ARTHUR P., and WILLIAMS, BENJAMIN M. Container. U. S. patent 2,612,305. Filed Oct. 12, 1949. Issued Sept. 30, 1952. 5 claims. Assigned to Gaylord Container Corporation. [Cl. 229-23]

The invention relates specifically to multiple-trip fiberboard bottle containers designed for a service life of 15 or more return trips for reloading. The container has a reinforced wall structure, the reinforcing being preferably at the upper portion of the wall or walls; one or more of the walls may have a handhole therein. The method of manufacture is described. 19 figures. C.J.W.

POTTS, ROY C. Box handle and fastening means. U. S. patent 2,612,308. Filed Jan. 23, 1948. Issued Sept. 30, 1952. 11 claims. [Cl. 229-52]

Means are provided for the attachment of a wire handle to a fiberboard shipping container for eggs, fruits, and vegetables. 28 figures. C.J.W.

POTTS, ROY C. Combination handle and clip for containers. U. S. patent 2,612,309. Filed Dec. 20, 1946. Issued Sept. 30, 1952. 6 claims. [Cl. 229-52]

Containers for the shipment of eggs, fruits, and vegetables are claimed in which means are provided for securing the parts in the desired relationship but which can be removed to permit folding the containers for empty shipment. The fasteners require only simple slots in certain of the panel members; these can be incorporated during the manufacture of the box. 19 figures. C.J.W.

STOREY, ALVIN B. Cartons. Canadian patent 486,529. Filed Feb. 11, 1950. Issued Sept. 16, 1952. 2 claims. Assigned to Celanese Corporation of America.

A carton is claimed for the storing and shipping of yarn. This corresponds to U. S. patent 2,583,673 (Jan. 29, 1952); *cf.* B.I.P.C. 22: 552. 14 figures. C.J.W.

SHIPPING CONTAINERS—MULTIWALL BAGS

ECKMAN, GEORGE E. Compartment container assembly. Canadian patent 486,843. Filed Nov. 14, 1949. Issued Sept. 30, 1952. 6 claims. Assigned to American Can Company.

A compartment container is formed from two individual, hermetically sealed, double-seamed cans which are permanently locked together by means of their end seams in a simple clinching operation. It may be used for the packaging of foodstuffs which require different processing conditions, a single product such as coffee, chemicals which are sold and used together but which must not be mixed before using, and the like. 2 figures. C.J.W.

SULFITE WASTE LIQUOR

PLUMP, RALPH E., and CARROLL, JAMES W. Product and process for metal pickling. Canadian patent 486,583. Filed Jan. 31, 1947. Issued Sept. 16, 1952. 15 claims. Assigned to The Pennsylvania Salt Manufacturing Company.

An inhibitor for a pickling bath is formed by the addition of 89 parts of spent sulfite liquor and 89 parts of 37% formaldehyde to a solution of 60 parts of urea and 6 parts of thiourea in 89 parts of water; addition of 1.5 parts of hydrochloric acid causes the separation of the inhibitor. From 0.025 to 0.1% of this inhibitor is used in a pickling bath of 6% hydrochloric or 10% sulfuric or hydrofluoric acids. C.J.W.

WASTE

SWEENEY, ORLAND R., BROWN, MELVIN H., and ARNOLD, LIONEL K. Production of lignin, cellulose, and pentosans. U. S. patent 2,615,883. Filed Sept. 19, 1947. Issued Oct. 28, 1952. 16 claims. Assigned to Iowa State College Research Foundation. [Cl. 260-124]

Agricultural residues (e.g., corncobs, cornstalks, oat hulls, hemp hurds, bagasse, and straws) are digested with a dilute mixture of sulfuric, nitric, and hydrochloric acids; this may be formed from sulfuric acid, sodium nitrate, and sodium chloride. The digestion may be carried out for one to six hours at atmospheric pressure or above. The spent cooking liquor may be used for the production of furfural or pentose sugars (mainly xylose). The solid residue is digested with sodium hydroxide to remove the lignin, leaving cellulose as the final residue. Examples are given of methods of utilizing the lignin for plastics. C.J.W.

WOOD—EXTRACTIVES

HEARON, WILLIAM M. Process for conidendrol making. U. S. patent 2,612,508. Filed Dec. 5, 1949. Issued Sept. 30, 1952. 8 claims. Assigned to Crown Zellerbach Corporation. [Cl. 260-344.6]

A mixture of 5 grams of finely divided conidendrin, 25 ml. 57% hydriodic acid, 25 ml. glacial acetic acid, and 0.5 gram red phosphorus is gently refluxed 30 minutes; there results 76% of α-conidendrol. The reaction can also be carried out by heating one hour at 140°C. in a glass-lined bomb. In a similar manner β-conidendrin yields 41% β-conidendrol. C.J.W.

Book Reviews

CASEY, JAMES P. Pulp and paper; chemistry and chemical technology. New York, Interscience Publishers, 1952. v. 2. Properties of paper and converting. p. 797-1405; *cf.* B.I.P.C. 22: 803-4.

This volume is the second and concluding part of the author's treatment of the chemistry and chemical technology of pulping and papermaking. Its 600 pages open with an extensive chapter on paper properties. Next is a short chapter on the use of statistics in the paper industry. Then are presented a series of chapters related to the further processing or conversion of paper. These are chapters on pigment coating, printing, laminating and pasting, the internal treatment of paper with resinous materials, coating with resinous materials, and a final chapter on resins. Initial over-all reactions to this volume include recognition of the extremely wide range of subject matter treated. All the major areas of technology likely to be of concern to an industrial scientist in most pulp or paper mills are considered either in this volume or the companion volume I. In this sense, this second volume is perhaps uniquely commendable, for apart from the possibly extraneous chapter on statistics, it marshals an extensive array of material from the technical literature and other sources which, particularly in the more specialized fields of converting, heretofore was available only through considerable search. As the theory, philosophy, and techniques essential to the good use of statistical methods by the industrial scientist have been well presented by several eminent specialists, it is probably unnecessary and perhaps of little value and even dangerous to include in a work such as this a very much abbreviated discussion on statistical procedures. In such an abbreviation one incurs the risk of confusing the reader, as for example might be the unintended result which could follow from the paragraph on page 983, which alludes to Shewhart's criteria for ideal design statistics. Actually, of course, the setting up of a control system does not require that design data be drawn only from a system in control. If such were the case, how and why would the control system be initiated? Rather a start is made under the existing state and, gradually, perfection is approached (probably never realized) by continually adjusting the design data as control improves. One minor improvement in arrangement might result from placing the general chapter on resins before the chapters concerned with their use and applications. It is in the chapter on the properties of paper that there is considered need for more critical comment. This massive chapter essays an admittedly very difficult task, for it is a field wherein much has been measured and observed, yet one wherein much has yet to be learned. Thus, it would seem that a survey of the literature with respect to the properties of paper, especially for a treatise intended for textbook use, should be just as critically analytical as possible. In this chapter, however, there appear to be many statements which are perhaps overly dogmatic and others which are incorrect. For examples of dogmatism, consider: the arbitrary classification of paper properties on the opening page of the chapter, defining functional properties of paper as those which are dependent upon the fact that the basic constituent is cellulose (page 798); the statement (page 872) that color is one of the most important optical properties of paper, viewed against the assertion on the following page that color is not a property of paper; the statement (page 896) that neutral sulfite semichemical pulps which have been bleached with hypochlorite in the presence of sodium silicate exhibit fluorescence; and a considerable number of other statements and assertions which are considered too rigid and inflexible. For examples of incorrect statements, consider: on page 823, strain is incorrectly defined as "resistance to deformation" and also as "deflection in

inches"—yet on page 815 strain is correctly defined as the ratio of change in dimension to the original dimension. Perhaps it would be better to use the simple rigorous terms "load" and "elongation" and omit the more troublesome terms "stress" and "strain" when discussing the rheological properties of paper. In the section on the brightness of paper (page 888 *et seq.*) there appears to be some confusion. The statement is made (page 888 and again page 890) that brightness is the reflectance at a single wavelength (457 mμ.). Actually, of course, the wavelengths of the reflected light seen by the receiver photocell in the GERM when measuring brightness are distributed over the range from about 400 to 500 mμ. It is the ***effective wavelength*** which is 457 ±0.5 mμ. An adequate treatment of this point is given in reference number 189. On page 932 it is stated that paper samples are conditioned in order to maintain a constant predetermined moisture at the time of testing. Rather the situation is that conditioning permits establishing the equilibrium moisture content; thus conventionally papers are tested at such moisture contents as result from conditioning, and these will likely be different for different papers and for different histories of the same kind of paper. In addition to lapses into dogmatic statements and various inaccuracies, the chapter on the properties of paper fails at times to be analytically critical of subject matter. There is a tendency to accept the published word as infallible. In making these criticisms of this volume, and particularly the comment on the opening chapter, one is very much aware of the great difficulty in avoiding some grounds for criticism, particularly in this field, and hence these are made with the hope that subsequent editions of this much needed work may benefit, for this volume is a welcome addition in the field. The chapter on properties of paper was reviewed jointly with J. A. Van den Akker, and the chapter on pigment coating with John W. Swanson.

D. J. MACLAURIN

COTTRALL, LESLIE G. Introduction to stuff preparation for paper making. London, Charles Griffin & Co., Ltd., 1952. 183 p.

This discussion of the general theory and principles of stuff preparation is, according to the author, addressed to students of papermaking who have a limited knowledge of physics and chemistry. The author has drawn freely upon the work of others but has deliberately omitted all references to such work. The first chapters discuss briefly the papermaking fiber (with photomicrographs) and the manufacture of rag, chemical wood, esparto, straw, and mechanical pulps (just sufficient to make the further discussion of stock preparation intelligible); the same is true of the short chapters on the structure and composition of wood and cellulose. The main thesis of the book is, of course, the discussion of various types of beaters and refiners, the comparison of these two types of stock preparation equipment, and the effect of these operations on the properties of the resulting paper sheet. In the author's view, the possibility of improving the present stock preparation machines depends on an analysis of the mechanical treatment which they apply to the fibers and to eliminate all such treatments except those which, with the least expenditure of power, cut the fibers and/or rub the surfaces of them and simultaneously apply forces which incipiently disturb the structure of the fibers so as to increase their pliability and plasticity.

C. J. WEST

The Institute of Paper Chemistry has entered into an agreement with University Microfilms, Ann Arbor, Michigan, whereby University Microfilms is authorized to provide microfilm copies of this Bulletin to subscribers. To the extent that back issues were in print at the date of execution of the agreement, microfilm copies of these back issues can also be obtained. Sales by University Microfilms of films of this Bulletin are restricted to regular subscribers to the Bulletin. The microfilm is distributed only at the end of the volume year. The film is in the form of positive microfilm, and is furnished on metal reels, suitably labeled. Inquiries concerning purchase should be directed to:

University Microfilms
313 North First Street
Ann Arbor, Michigan

LIBRARY SERVICE

The Library of The Institute of Paper Chemistry is located in the Kimberly Memorial Building. Its purpose is to serve the students and the faculty of The Institute of Paper Chemistry and the chemists and technologists of the pulp and paper industry.

To contributing members it gives the following service:

A monthly bulletin is issued, listing all new books and periodicals added to the library and containing titles and abstracts of articles published during the previous month in the field of pulp and paper chemistry and technology. The annual index carries a list of periodicals currently received.

At a reasonable cost the librarian will furnish complete reference lists on chemical and technical problems for member mills, and will procure translations, photostats, or abstracts of the articles listed. Upon request, member mills working on special problems will be kept in touch with new publications related to their work.

Reviews of new publications pertaining to the field of pulp and papermaking will be included from time to time.

The library is open daily with the exception of Sundays from 8:15-5:00 and from 7:30-9:30. Saturday it closes at 5:00 o'clock.